# IMMUNOLOGY TODAY

Author Index

Subject Index

Index of Books Reviewed

2000

Volume 21
Issues 1–12
ISSN 0167-5699

ELSEVIER
SCIENCE
LONDON

## *Immunology Today*

Elsevier Science London,
84 Theobald's Road,
London, UK WC1X 8RR
Tel: +44 (0)20 7611 4400
Fax: +44 (0)20 7611 4401
E-mail: immunology@current-trends.com



*Advisory Editorial Board*

G. Anderson *Birmingham, UK*
J.D. Ashwell *Bethesda, USA*
F.H. Bach *Boston, USA*
L.J. Berg *Worcester, USA*
F.R. Carbone *Melbourne, Australia*
V.M. Dixit *San Francisco, USA*
M.F. Flajnik *Baltimore, USA*
S. Grabbe *Münster, Germany*
T. Honjo *Kyoto, Japan*
B.A. Imhof *Geneva, Switzerland*
C.A. Janeway *New Haven, USA*
P.W. Kincade *Oklahoma City, USA*
M. Kronenberg *La Jolla, USA*
A. Mantovani *Milan, Italy*
L.M. Moretta *Genova, Italy*
G.J.V. Nossal *Melbourne, Australia*
P.S. Ohashi *Toronto, Canada*
K.B.M. Reid *Oxford, UK*
P. Ricciardi-Castagnoli *Milan, Italy*
N. Sarvetnick *La Jolla, USA*
C. Terhorst *Boston, USA*
J-C. Weill *Paris, France*
K. Wood *Oxford, UK*
R.M. Zinkernagel *Zurich, Switzerland*

*Editor* Elaine Bell

*Assistant Editor* Bea Perks

*Editorial Administrators* Liam Benison, Sheema Sheikh and Natalie Baderman

*Production* Philip Patenall and Helen Budd

*Publishing Manager* Rob Brines



© 2001 Elsevier Science Ltd.

This journal and the individual contributions contained in it are protected by the copyright of Elsevier Science Ltd. Except as outlined in the terms and conditions, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher, Elsevier Science London, 84 Theobald's Road, London, UK WC1X 8RR.

# Author Index

(BR): Book Review
(L): Letter to the Editor


**A**

Adema, G.J. *see* Hartgers, F.C.
Adkins, B., T-cell function in the human newborn (L) 108
Adorini, L. *see* Aloisi, F.
Adra, C.N. *see* Shirakawa, T.
Agematsu, K., Hokibara, S., Nagumo, H. and Komiyama, A., CD27: a memory B-cell marker 204
Aguzzi, A. *see* Raeber, A.J.
Akbar, A.N., Lord, J.M. and Salmon, M., IFN-α and IFN-β: a link between immune memory and chronic inflammation 337
Alcami, A. and Efsathiou, S., Soluble chemokine binding proteins are also encoded by herpesviruses (L) 526
Alcami, A. and Koszinowski, U.H., Viral mechanisms of immune evasion 447
Alderuccio, F. *see* Toh, B-H.
Allcock, R.J.N., Martin, A.M. and Price, P., The mouse as a model for the effects of MHC genes on human disease 328
Aloisi, F., Ria, F. and Adorini, L., Regulation of T-cell responses by CNS antigen-presenting cells: different roles for microglia and astrocytes 141
Altman, A., Isakov, N. and Baier, G., Protein kinase Cθ: a new essential superstar on the T-cell stage 567
Altruda, F. *see* Wymann, M.P.
Anderson, K.C. *see* Stevenson, F.K.
Annunziato, F. *see* Romagnani, P.
Ansell, P.R.J., Hybridoma technology: a view from the patent arena 357
Ansorge, S., Langner, J., Bühling, F. and Lendeckel, U., Proteolytic signals from Magdeburg 166
Aractingi, S., Uzan, S., Dausset, J. and Carosella, E.D., Microchimerism in human diseases 116
Arata, Y. *see* Kato, K.
Archer, J.R. *see* Edwards, J.C.W.
Arnaout, R.A., Perforin deficiency: fighting unarmed? (L) 592
Ashwell, J.D., Vacchio, M.S. and Galon, J., Do glucocorticoids participate in thymocyte development? (L) 644

**B**

Baggiolini, M and Loetscher, P., Chemokines in inflammation and immunity 418
Baier, G. *see* Altman, A.
Bakker, A.B.H. *see* Lanier, L.L.
Balasa, B., Shi, F-D. and Sarvetnick, N., Is pathogenic humoral autoimmunity a Th1 response? (L) 306, 307
Balasa, B. and Sarvetnick, N., Is pathogenic humoral autoimmunity a Th1 response? Lessons from (for) myasthenia gravis (L) 19, 306
Balendiran, G. *see* Hansen, T.
Balkwill, F., Foxwell, B. and Brennan, F., TNF is here to stay! 470
Balomenos, D. and Martinez-A, C., Cell-cycle regulation in immunity, tolerance and autoimmunity 551
Baniyash, M. *see* Caplan, S.
Barrett, J.W. *see* Lalani, A.S.
Basson, M.A. and Zamoyska, R., The CD4/CD8 lineage decision: integration of signalling pathways 509
Bauer, J. *see* 't Hart, B.A.
Baumruker, T. *see* Prieschl, E.E.
Baxter, A.G. *see* Godfrey, D.I.
Beck, J.F. *see* Lal, S.
Becker, J.C. and thor Straten, P., T-cell clonality in immune responses (L) 107
Belessi, C. *see* Stamatopoulos, K.
Bell, E., New Trends at *Immunology Today* 467
Béné, M.C., Stockinger, H., Capel, P.J.A., Chapel, H. and Knapp, W., Clinical immunology: a unified vision for Europe 210
Bennett, M. *see* Stepp, S.; Stepp, S.E.
Berman, J.S. *see* O'Regan, A.W.
Beverley, P. *see* Drakesmith, H.
Biassoni, R. *see* Moretta, A.; Moretta, L.
Biron, C.A. *see* Karp, C.L.
Blanchong, C.A. *see* Yu, C.Y.
Bomprezzi, R. *see* Salvetti, M.
Bonagura, V. *see* Sutton, B.
Bontrop, R.E. *see* 't Hart, B.A.
Boon, L. *see* 't Hart, B.A.
Borrebaeck, C.A.K., Antibodies in diagnostics – from immunoassays to protein chips 379
Borregaard, N., Elsbach, P., Ganz, T., Garred, P. and Svejgaard, A., Innate immunity: from plants to humans 68
Bottino, C. *see* Moretta, A.; Moretta, L.
Bouvet, J-P. and Dighiero, G., Cross-reactivity and polyreactivity: the two sides of a coin (L) 411
Bowness, P. *see* Edwards, J.C.W.
Boyd, R. and Chidgey, A., T-cell development and function – a downunder experience 472
Boyd, R.L. *see* Godfrey, D.I.
Boyle, W.J. *see* Kong, Y-Y.
Brand, M.D. *see* Buttgereit, F.
Braun, R. *see* Kroegel, C.
Brekke, O.H. *see* Sandlie, I.
Brennan, F. *see* Balkwill, F.
Brocker, T. *see* Walker, L.S.K.
Brok, H.P.M. *see* 't Hart, B.A.
Brown, K.L. *see* Bruce, M.E.
Bruce, M.E., Brown, K.L., Mabbott, N.A., Farquhar, C.F. and Jeffrey, M., Follicular dendritic cells in TSE pathogenesis 442
Buckley, C.D., Vascular Adhesion Molecules and Inflammation (BR) 594
Buckley, C.D. and Simmons, D.L., Sticky moments with sticky molecules 601
Bühling, F. *see* Ansorge, S.
Burmester, G-R. *see* Buttgereit, F.
Buttgereit, F., Burmester, G-R. and Brand, M.D., Bioenergetics of immune functions: fundamental and therapeutic aspects 192

**C**

Calvo, J.R. *see* Pozo, D.
Capel, P.J.A. *see* Béné, M.C.
Caplan, S. and Baniyash, M., Searching for significance in TCR–cytoskeleton interactions 223
Carleton, M. *see* Kruisbeek, A.M.
Carosella, E.D. *see* Aractingi, S.
Carosella, E.D., Paul, P., Moreau, P. and Rouas-Freiss, N., HLA-G and HLA-F: fundamental and pathophysiological aspects 532
Center, D.M., Kornfeld, H., Ryan, T.C. and Cruikshank, W.W., Interleukin 16: implications for CD4 function and HIV-1 progression 273
Chain, B. *see* Drakesmith, H.
Chambers, D.A. and Schauenstein, K., Mindful immunology: neuroimmunomodulation 168
Chames, P. *see* Hoogenboom, H.R.
Chapel, H. *see* Béné, M.C.

Cheever, A.W., Hoffmann, K.F. and Wynn, T.A., Immunopathology of schistosomiasis mansoni in mice and men (L) 465
Chidgey, A. *see* Boyd, R.
Chupp, G.L. *see* O'Regan, A.W.
Claas, F. *see* Van Rood, J.J.
Clark, M., Antibody humanization: a case of the 'Emperor's new clothes'? 397
Clark, M., Recombinant Antibodies (BR) 412
Clissi, B. *see* D'Ambrosio, D.
Cohen, I.R. *see* Schwartz, M.
Cohen, S., Cytokine profile data (L) 199
Cohn, M., The biology or recognitive repertoires 433
Colantonio, L. *see* D'Ambrosio, D.
Cole, T.J. *see* Godfrey, D.I.
Colonna, M., Moretta, A., Fély, F. and Vivier, E., A high-resolution view of NK-cell receptor: structure and function 428
Colucci, F. *see* Turner, M.
Cook, G., Immunobiology: The Immune System in Health and Disease (BR) 201
Cook, M., Receptor editing (and the evolution of sex) (L) 55
Corper, A. *see* Sutton, B.
Correa-Oliveira, R. *see* Teixeira, M.M.
Cruikshank, W.W. *see* Center, D.M
Cullinan, P. *see* Jones, M.G.
Cyster, J.G. *see* Sedgwick, J.D.

**D**

Daha, M. *see* Morgan, B.P.
D'Ambrosio, D., Iellem, A., Colantonio, L., Clissi, B., Pardi, R. and Sinigaglia, F., Localization of Th-cell subsets in inflammation: differential thresholds for extravasation of Th1 and Th2 cells 183
Dausset, J. *see* Aractingi, S.
Davenport, M.P., Grimm, M.C. and Lloyd, A.R., A homing selection hypothesis for T-cell trafficking 315
De Baets, M. *see* Saoudi, A.
De Rosa, S.C. *see* Herzenberg, L.A.
De Saint Basile, G. *see* Stepp, S.; Stepp, S.E.
Deichmann, K.A. *see* Shirakawa, T.
Delgado, M. *see* Pozo, D.
Di Santo, J.P. *see* Turner, M.
Dianda, L. *see* Wedderburn, L.R.
Dighiero, G. *see* Bouvet, J-P.
Dinarello, C.A. *see* O'Neill, L.A.J.
DosReis, G.A. *see* Lopes, M.F.
Downing, J.E.G. and Miyan, J.A., Neural immunoregulation: emerging roles for nerves in immune homeostasis and disease 281
Dozmorov, I., Eisenbraun, M.D. and Lefkovits, I., Limited dilution analysis: from frequencies to cellular interactions 15
Drakesmith, H., Chain, B. and Beverley, P., How can dendritic cells cause autoimmune disease? 214
Dübel, S., The antibody web 355

**E**

Edwards, J.C.W., Bowness, P. and Archer, J.R., Jekyll and Hyde: the transformation of HLA-B27 256
Effros, R.B. *see* Globerson, A.
Efsathiou, S. *see* Alcami, A.
Eisenbraun, M.D. *see* Dozmorov, I.
Elsbach, P. *see* Borregaard, N.
Emmerich, N.P.N. *see* Stoltze, L.
Engwerda, C.R. and Kaye, P.M., Organ-specific immune responses associated with infectious disease 73

**F**

Fallon, P.G., Immunopathology of schistosomiasis: a cautionary tale of mice and men 29
Farquhar, C.F. *see* Bruce, M.E.
Farrar, J.D. and Murphy, K.M., Type I interferons and T helper development 484
Ferrone, S. *see* Seliger, B.
Ferrone, S., Finerty, J.F., Jaffee, E.M. and Nabel, G.J., How much longer will tumour cells fool the immune system? 70
Figdor, C.G. *see* Hartgers, F.C.
Finerty, J.F. *see* Ferrone, S.
Fink, P.J. and McMahan, C.J., Lymphocytes rearrange, edit and revise their antigen receptors to be useful yet safe 561
Firestein, G.S. *see* Tak, P.P.
Fisch, P., Moris, A., Rammensee, H-G. and Handgretinger, R., Inhibitory MHC class I receptors on γδ T cells in tumour immunity and autoimmunity 187
Flynn, S. *see* Walker, L.S.K.
Foerster, M. *see* Kroegel, C.
Folkerts, G., Walzi, G. and Openshaw, P.J.M. Clean living increases more than just atopic disease (L) 249
Folkerts, G., Walzi, G. and Openshaw, P.J.M. Do common childhood infections 'teach' the immune system not to be allergic? 118
Foxwell, B. *see* Balkwill, F.
Freire-de-Lima, C.G. *see* Lopes, M.F.
Fridman, W.H. *see* Kato, K.
Fuchs, D. *see* Widner, B.

**G**

Galon, J. *see* Ashwell, J.D.
Ganz, T. *see* Borregaard, N.
Gao, G.F. and Jakobsen, B.K., Molecular interactions of coreceptor CD8 and MHC class I: the molecular basis for functional coordination with the T-cell receptor 630
Garred, P. *see* Borregaard, N.
Gazzinelli, R.T. *see* Teixeira, M.M.
George, A.J.T., Jumping or walking: which is better? (L) 56
Giovannoni, G. *see* Rook, G.A.W.
Gleeson, P.A. *see* Koch, N.
Glennie, M.J. and Johnson, P.W.M., Clinical trials of antibody therapy 403
Glimcher, L.H. *see* Rengarajan, J.
Globerson, A. and Effros, R.B., Ageing of lymphocytes and lymphocytes in the aged 515
Godfrey, D.I., Do glucocorticoids participate in thymocyte development? (L) 645
Godfrey, D.I., Hammond, K.J.L., Poulton, L.D., Smyth, M.J. and Baxter, A.G., NKT cells: facts, functions and fallacies 573
Godfrey, D.I., Purton, J.F., Boyd, R.L. and Cole, T.J., Stress-free T-cell development: glucocorticoids are not obligatory 606
Gomariz, R.P. *see* Pozo, D.
Grabbe, S., Kämpgen, E. and Schuler, G., Dendritic cells: multi-lineal and multi-functional 431
Gracie, J.A. *see* McInnes, I.B.
Graham, F.L., Adenovirus vectors for high-efficiency gene transfer into mammalian cells 426
Green, D.R. *see* Tak, P.P.
Griekspoor, A.C. *see* Reits, E.A.J.
Grimm, M.C. *see* Davenport, M.P.
Guerrero, J.M. *see* Pozo, D.
Guery, J-C. *see* Saoudi, A.
Gulbranson-Judge, A. *see* Walker, L.S.K.

**H**

Häfner, D. *see* Kroegel, C.
Haks, M.C. *see* Kruisbeek, A.M.
Hammond, K.J.L. *see* Godfrey, D.I.
Handgretinger, R. *see* Fisch, P.
Hansen, T., Balendiran, G., Solheim, J., Ostrov, D. and Nathenson, S., Structural features of MHC class I molecules that might facilitate alternative pathways of presentation 83
Hartgers, F.C., Figdor, C.G. and Adema, G.J., Towards a molecular understanding of dendritic cell immunobiology 542
Hassan, J. *see* Marshall-Clarke, S.
Hassan, J. and Reen, D.J., T-cell function in the human newborn (L) 107
Hatzifoti, C., Wren, B.W. and Morrow, W.J.W., *Helicobacter pylori* vaccine strategies – triggering a gut reaction 615
He, H-T. *see* Ilangumaran, S.
Hengartner, H. *see* Moretta, L.
Herrmann, M., Voll, R.E. and Kalden, J.R., Etiopathogenesis of systemic lupus erythematosus 424
Hershberg, R.M. and Mayer, L.F., Antigen processing and presentation by intestinal epithelial cells – polarity and complexity 123
Herzenberg, L.A., De Rosa, S.C. and Herzenberg, L.A., Monoclonal antibodies and the FACS: complementary tools for immunobiology and medicine 383
Herzenberg, Leonard A. *see* Herzenberg, L.A.
Hirsch, E. *see* Wymann, M.P.

Hoessli, D.C. *see* Ilangumaran, S.
Hoffmann, K.F. *see* Cheever, A.W.
Hokibara, S. *see* Agematsu, K.
Hoogenboom, H.R. and Chames, P., Natural and designer binding sites made by phage display technology 371
Hopkin, J.M. *see* Shirakawa, T.

**I**

Iellem, A. *see* D'Ambrosio, D.
Ilangumaran, S., He, H-T. and Hoessli, D.C., Microdomains in lymphocyte signalling: beyond GPI-anchored proteins 2
Imhof, B.A. *see* Kosco-Vilbois, M.H.
Infante, A.J., Krolick, K.A. and Wall, K.A., Is pathogenic humoral autoimmunity a Th2 response? Lessons from (for) myasthenia gravis (L) 305
Irani, D.N. *see* Karp, C.L.
Isakov, N. *see* Altman, A.
Izuhara, K. *see* Shirakawa, T.

**J**

Jaffee, E.M. *see* Ferrone, S.
Jakobsen, B.K. *see* Gao, G.F.
Jeffrey, M. *see* Bruce, M.E.
Johnson, P.W.M. *see* Glennie, M.J.
Jones, M.G., Welch, J., Cullinan, P. and Newman Taylor, A.J., Allergenicity of grass and oil seed rape pollen (L) 155

**K**

Kalden, J.R. *see* Herrmann, M.
Kämpgen, E. *see* Grabbe, S.
Karp, C.L., Biron, C.A. and Irani, D.N., Interferon β in multiple sclerosis: is IL-12 suppression the key? 24
Kato, K., Fridman, W.H., Arata, Y. and Sautès-Fridman, C., A conformational change in the Fc precludes the binding of two Fcγ receptor molecules to one IgG 310
Kaye, P.M. *see* Engwerda, C.R.
Kendall, M.D. *see* Mentlein, R.
Kipriyanov, S.M. *see* Little, M.
Kloetzel, P-M. *see* Stoltze, L.
Knapp, W. *see* Béné, M.C.
Koch, N., van Driel, I.R. and Gleeson, P.A., Hijacking a chaperone: manipulation of the MHC class II presentation pathway 546
Kohm, A.P. and Sanders, V.M., Norepinephrine: a messenger from the brain to the immune system 539
Komiyama, A. *see* Agematsu, K.
Kong, Y-Y., Boyle, W.J. and Penninger, J.M., Osteoprotegerin ligand: a regulator of immune responses and bone physiology 495
Körner, H. *see* Sedgwick, J.D.
Kornfeld, H. *see* Center, D.M
Kosco-Vilbois, M.H. and Imhof, B.A., *In vivo veritas* 64
Kosmas, C. *see* Stamatopoulos, K.
Koszinowski, U.H. *see* Alcami, A.
Kotwal, G.J., Poxviral mimicry of complement and chemokine system components: what's the end game? 242
Krieg, A.M. and Wagner, H., Causing a commotion in the blood: immunotherapy progresses from bacterial to bacterial DNA 521
Kroegel, C., Foerster, M., Häfner, D., Reinhard Grahmann, P., Warner, J.A. and Braun, R., Putting priming into perspective – from cellular heterogeneity to cellular plasticity 218
Krolick, K.A. *see* Infante, A.J.
Kruisbeek, A.M., Haks, M.C., Carleton, M., Michie, A.M., Zúñiga-Pflücker, J.C. and Wiest, D.L., Branching out to gain control: how the pre-TCR is linked to multiple functions 637
Kumar, V. *see* Stepp, S.; Stepp, S.E.
Kyriazopoulos, P. *see* Stamatopoulos, K.

**L**

Lal, S., Lauer, U.M., Niethammer, D., Beck, J.F. and Schlegel, P.G., Suicide genes: past, present and future perspectives 48
Lalani, A.S., Barrett, J.W. and McFadden, G., Modulating chemokines: more lessons from viruses 100
Laman, J.D. *see* 't Hart, B.A.
Lane, P.J.L. *see* Walker, L.S.K.
Langner, J. *see* Ansorge, S.
Lanier, L.L. and Bakker, A.B.H., The ITAM-bearing transmembrane adaptor DAP12 in lymphoid and myeloid cell function 611
Lauer, U.M. *see* Lal, S.
Le Gall, F. *see* Little, M.
Leceta, J. *see* Pozo, D.
Lee, D-S. *see* Staerz, U.D.
Lefkovits, I. *see* Dozmorov, I.
Lendeckel, U. *see* Ansorge, S.
Leonard, W.J. *see* Nakajima, H.
Leslie, R.D.G. *see* Salvetti, M.
Leung, B.P. *see* McInnes, I.B.
Liew, F.Y. *see* McInnes, I.B.
Lin, J. *see* Tomlinson, M.G.
Little, M., Kipriyanov, S.M., Le Gall, F. and Moldenhauer, G., Of mice and men: hybridoma and recombinant antibodies 364
Liu, C-C., Perussia, B. and Young, J.D-E., The emerging role of IL-15 in NK-cell development 113
Lloyd, A.R. *see* Davenport, M.P.
Loetscher, P. *see* Baggiolini, M.
Longo, D.L. *see* Murphy, W.J.
Lopes, M.F., Freire-de-Lima, C.G. and DosReis, G.A., The macrophage haunted by cell ghosts: a pathogen grows 489
Lord, J.M. *see* Akbar, A.N.

**M**

Mabbott, N.A. *see* Bruce, M.E.
Mackiewicz, A., Immunology in Poland 415
Maeurer, M.J. *see* Seliger, B.
Maggi, E. *see* Romagnani, P.
Malhotra, R., Merry, A. and Ray, K.P., Innate immunity: a primitive system in humans 534
Malkovsky, M. *see* Wells, A.D.
Mandel, T.E. *see* Smith, R.M.
Mantovani, A. *see* Wymann, M.P.
Cytokine profile data (L) 200
Mao, X-Q. *see* Shirakawa, T.
Marincola, F.M. *see* Wang, E.
Marshall-Clarke, S., Reen, D., Tasker, L. and Hassan, J., Neonatal immunity: how well has it grown up? 35
Martin, A.M. *see* Allcock, R.J.N.
Martínez, C. *see* Pozo, D.
Martinez-A, C. *see* Balomenos, D.
Mason, D. *see* Seddon, B.
Massacesi, L. *see* 't Hart, B.A.
Mathew, P.A. *see* Stepp, S.; Stepp, S.E.
Mayer, L.F. *see* Hershberg, R.M.
McFadden, G. *see* Lalani, A.S.
McInnes, I.B., Gracie, J.A., Leung, B.P., Wei, X-Q. and Liew, F.Y., Interleukin18: a pleiotropic participant in chronic inflammation 312
McLachlan, S.M., A powerful role for B cells and autoantibodies in disease (L) 57
McMahan, C.J. *see* Fink, P.J.
Mentlein, R. and Kendall, M.D., The brain and thymus have much in common: a functional analysis of their microenvironments 133
Meri, S. *see* Morgan, B.P.
Merry, A. *see* Malhotra, R.
Michie, A.M. *see* Kruisbeek, A.M.
Miller, W. *see* Yu, C.Y.
Milstein, C., With the benefit of hindsight 359
Mingari, M.C. *see* Moretta, A.; Moretta, L.
Miyan, J.A. *see* Downing, J.E.G.
Moldenhauer, G. *see* Little, M.
Moreau, P. *see* Carosella, E.D.
Moretta, A. *see* Colonna, M.; Moretta, L.
Moretta, A., Biassoni, R., Bottino, C., Mingari, M.C. and Moretta, L., Natural cytotoxicity receptors that trigger human NK-cell-mediated cytolysis 228
Moretta, L. *see* Moretta, A.
Moretta, L., Biassoni, R., Bottino, C., Mingari, M.C. and Moretta, A., Human NK-cell receptors 420
Moretta, L., Moretta, A., Hengartner, H. and Zinkernagel, R.M., On the pathogenesis of perforin defects and related immunodeficiencies (L) 593
Morgan, B.P., Daha, M., Meri, S. and Nicholson-Weller, A., Into the third century of complement research 603
Moris, A. *see* Fisch, P.

Morrow, W.J.W. *see* Hatzifoti, C.
Mosmann, T., Cytokine profile data (L) 199
Murphy, D.J., Allergenicity of grass and oil seed rape pollen (L) 155
Murphy, K.M. *see* Farrar, J.D.
Murphy, W.J. and Longo, D.L., Growth hormone as an immunomodulating therapeutic agent 211

**N**

Nabel, G.J. *see* Ferrone, S.
Nagumo, H. *see* Agematsu, K.
Nakajima, H., Noguchi, M. and Leonard, W.J., Role of the common cytokine receptor γ chain (γc) in thymocyte selection 88
Nathenson, S. *see* Hansen, T.
Nau, G.J. *see* O'Regan, A.W.
Neefjes, J. *see* Reits, E.A.J.
Newman Taylor, A.J. *see* Jones, M.G.
Nicholson-Weller, A. *see* Morgan, B.P.
Niethammer, D. *see* Lal, S.
Noguchi, M. *see* Nakajima, H.
Nussbaum, A.K. *see* Stoltze, L.

**O**

Ochsenbein, A.F. and Zinkernagel, R.M., Natural antibodies and complement link innate and acquired immunity 624
O'Gormon, M.R.G., Case Studies in Immunology: A Clinical Companion (BR) 251
O'Neill, L.A.J. and Dinarello, C.A., The IL-1 receptor/toll-like receptor superfamily: crucial receptors for inflammation and host defense 206
Openshaw, P.J.M. *see* Folkerts, G.
O'Regan, A.W., Nau, G.J., Chupp, G.L. and Berman, J.S., Osteopontin (Eta-I) in cell-mediated immunity: teaching an old dog new tricks 475
Ostrov, D. *see* Hansen, T.

**P**

Papadaki, T. *see* Stamatopoulos, K.
Pardi, R. *see* D'Ambrosio, D.
Paston, P.A., Serpins and other serine protease inhibitors (L) 354
Paul, P. *see* Carosella, E.D.
Penninger, J.M. *see* Kong, Y-Y.
Perussia, B. *see* Liu, C-C.
Piccinni, M-P. *see* Romagnani, P.
Pleyer, U., Ritter, T. and Volk, H-D., Immune tolerance and gene therapy in transplantation 12
Podack, E.R. *see* Rukavina, D.
Poulton, L.D. *see* Godfrey, D.I.
Pound, J., Germ Warfare – Breakthroughs in Immunology (BR) 527
Pozo, D., Delgado, M., Martínez, C., Guerrero, J.M., Leceta, J., Gomariz, R.P. and Calvo, J.R., Immunobiology of vasoactive intestinal peptide (VIP) 7
Pozzilli, P. *see* Salvetti, M.
Price, P. *see* Allcock, R.J.N.
Prieschl, E.E. and Baumruker, T., Sphingolipids: second messengers, mediators and raft constituents in signaling 555
Purton, J.F. *see* Godfrey, D.I.

**Q**

Qi, Y. *see* Staerz, U.D.

**R**

Raeber, A.J. and Aguzzi, A., Engulfment of prions in the germinal centre 66
Ramage, J., Lymphocytes: A Practical Approach (BR) 595
Rammensee, H-G. *see* Fisch, P.
Ramsay, A.J. *see* Ramshaw, I.A.,
Ramshaw, I.A. and Ramsay, A.J., The prime-boost strategy: exciting prospects for improved vaccination 163
Ray, K.P. *see* Malhotra, R.
Redman, C. *see* Sacks, G.
Reen, D. *see* Marshall-Clarke, S.
Reen, D.J. *see* Hassan, J.
Reinhard Grahmann, P. *see* Kroegel, C.
Reits, E.A.J., Griekspoor, A.C. and Neefjes, J., How does TAP pump peptides? Insights from DNA repair and traffic ATPases 598
Rengarajan, J., Szabo, S.J. and Glimcher, L.H., Transcriptional regulation of Th1/Th2 polarization 479
Ria, F. *see* Aloisi, F.
Rickwood, D., Freshney's Culture of Animal Cells: A Multimedia Guide (BR) 57
Rigley, K., Dendritic Cells (BR) 156
Riminton, D.S. *see* Sedgwick, J.D.
Ristori, G. *see* Rook, G.A.W.; Salvetti, M.
Ritter, T. *see* Pleyer, U.
Robins, R.A., Counting antigens using antibodies (L) 154
Romagnani, P., Annunziato, F., Piccinni, M-P., Maggi, E. and Romagnani, S., Cytokines and chemokines in T lymphopoiesis and T-cell effector function 416
Romagnani, S. *see* Romagnani, P.
Rook, G.A.W., Clean living increases more than just atopic disease (L) 249
Rook, G.A.W., Ristori, G., Salvetti, M., Giovannoni, G., Thompson, E.J. and Stanford, J.L., Bacterial vaccines for the treatment of multiple sclerosis and other autoimmune diseases 503
Rouas-Freiss, N. *see* Carosella, E.D.
Rukavina, D. and Podack, E.R., Abundant perforin expression at the maternal–fetal interface: guarding the semiallogeneic transplant? 160
Ryan, T.C. *see* Center, D.M

**S**

Sacks, G., Sargent, I. and Redman, C., Innate immunity in pregnancy (L) 200
Salmon, J.E., Systemic Lupus Erythematosus (BR) 156
Salmon, M. *see* Akbar, A.N.
Salvetti, M. *see* Rook, G.A.W.
Salvetti, M., Ristori, G., Bomprezzi, R., Pozzilli, P. and Leslie, R.D.G., Twins: mirrors of the immune system 342
Sanders, V.M. *see* Kohm, A.P.
Sandlie, I. and Brekke, O.H., Antibody Fusion Proteins (BR) 250
Saoudi, A., Guery, J-C. and De Baets, M., Is pathogenic humoral autoimmunity a Th1 response? (L) 306
Sargent, I. *see* Sacks, G.
Sarvetnick, N. *see* Balasa, B
Sautès-Fridman, C. *see* Kato, K.
Schauenstein, K. *see* Chambers, D.A.
Schild, H. *see* Stoltze, L.
Schlegel, P.G. *see* Lal, S.
Schuler, G. *see* Grabbe, S.
Schwartz, M. and Cohen, I.R., Autoimmunity can benefit self-maintenance 265
Schweighoffer, E. *see* Turner, M.
Seddon, B. and Mason, D., The third function of the thymus 95
Sedgwick, J.D., Riminton, D.S., Cyster, J.G. and Körner, H., Tumor necrosis factor: a master-regulator of leukocyte movement 110
Seliger, B., Maeurer, M.J. and Ferrone, S., Antigen-processing machinery breakdown and tumor growth 455
Sentry, J.W. *see* Toh, B-H.
Shi, F-D., *see* Balasa, B.
Shirakawa, T., Deichmann, K.A., Izuhara, K., Mao, X-Q., Adra, C.N. and Hopkin, J.M., Atopy and asthma: genetic variants of IL-4 and IL-13 signalling 60
Sijts, A. *see* Stoltze, L.
Simmons, D.L. *see* Buckley, C.D.
Sinigaglia, F. *see* D'Ambrosio, D.
Smith, K.G.C. *see* Tarlinton, D.M.
Smith, R.M. and Mandel, T.E., Pancreatic islet xenotransplantation: the potential for tolerance induction 42
Smyth, M.J. *see* Godfrey, D.I.
Solheim, J. *see* Hansen, T.
Sozzani, S. *see* Wymann, M.P.
Staerz, U.D., Lee, D-S. and Qi, Y., Induction of specific immune tolerance with hybrid antibodies 172
Stamatopoulos, K., Kosmas, C., Belessi, C., Stavroyianni, N., Kyriazopoulos, P. and Papadaki, T., Molecular insights into the immunopathogenesis of follicular lymphoma 298
Stanford, J.L. *see* Rook, G.A.W.
Stavroyianni, N. *see* Stamatopoulos, K.

Stepp, S., Mathew, P., Bennett, M., de Saint Basile, G. and Kumar, V., On the pathogenesis of perforin defects and related immunodeficiencies (L) 593
Stepp, S.E., Mathew, P.A., Bennett, M., de Saint Basile, G. and Kumar, V., Perforin: more than just an effector molecule 254
Stevenson, F.K. and Anderson, K.C., Preparing the ground for vaccination against multiple myeloma 170
Stockinger, H. *see* Béné, M.C.
Stoltze, L., Nussbaum, A.K., Sijts, A., Emmerich, N.P.N., Kloetzel, P-M. and Schild, H., The function of the proteasome system in MHC class I antigen processing 317
Sutton, B., Corper, A., Bonagura, V. and Taussig, M., The structure and origin of rheumatoid factors 177
Svejgaard, A. *see* Borregaard, N.
Szabo, S.J. *see* Rengarajan, J.

**T**

't Hart, B.A., van Meurs, M., Brok, H.P.M., Massacesi, L., Bauer, J., Boon, L., Bontrop, R.E. and Laman, J.D., A new primate model for multiple sclerosis in the common marmoset 290
Tak, P.P., Zvaifler, N.J., Green, D.R. and Firestein, G.S., Rheumatoid arthritis and p53: how oxidative stress might alter the course of inflammatory disease 78
Takei, F., Immunoreceptor Tyrosine-Based Inhibition Motifs (BR) 595
Tarlinton, D.M. and Smith, K.G.C., Dissecting affinity maturation: a model explaining selection of antibody-forming cells and memory B cells in the germinal centre 436
Tasker, L. *see* Marshall-Clarke, S.
Taussig, M. *see* Sutton, B.
Teixeira, M.M., Correa-Oliveira, R. and Gazzinelli, R.T., Immunoregulation in parasitic infection: insights for therapeutic intervention 536
Teran, L.M., CCL Chemokines and asthma 235
Thompson, E.J. *see* Rook, G.A.W.
Thor Straten, P. *see* Becker, J.C.
Toh, B-H., Sentry, J.W. and Alderuccio, F., The causative $H^+/K^+$ ATPase antigen in the pathogenesis of autoimmune gastritis 348
Tomlinson, M.G., Lin, J. and Weiss, A., Lymphocytes with a complex: adapter proteins in antigen receptor signaling 584
Trowsdale, J., The HLA Fact Book (BR) 308
Turner, M., Schweighoffer, E., Colucci, F., Di Santo, J.P. and Tybulewicz, V.L., Tyrosine kinase SYK: essential functions for immunoreceptor signalling 148
Tybulewicz, V.L. *see* Turner, M.

**U**

Uzan, S. *see* Aractingi, S.

**V**

Vacchio, M.S. *see* Ashwell, J.D.
Van de Winkel, J.G.J. *see* Van Spriel, A.B.
Van Driel, I.R. *see* Koch, N.
Van Meurs, M. *see* 't Hart, B.A.
Van Ojik, H.H. *see* Van Spriel, A.B.
Van Rood, J.J. and Claas, F., Both self and non-inherited maternal HLA antigens influence the immune response 269
Van Spriel, A.B., van Ojik, H.H. and van de Winkel, J.G.J., Immunotherapeutic perspective for bispecific antibodies 391
Vély, F. *see* Colonna, M.
Vivier, E. *see* Colonna, M.
Volk, H-D. *see* Pleyer, U.
Voll, R.E. *see* Herrmann, M.

**W**

Wagner, H. *see* Krieg, A.M.
Walker, L.S.K., Gulbranson-Judge, A., Flynn, S., Brocker, T. and Lane, P.J.L., Co-stimulation and selection for T-cell help for germinal centres: the role of CD28 and OX40 333
Wall, K.A. *see* Infante, A.J.
Walzi, G. *see* Folkerts, G.
Wang, E. and Marincola, F.M., A natural history of melanoma: serial gene expression analysis 619
Warner, J.A. *see* Kroegel, C.
Wedderburn, L.R. and Dianda, L., T cells at the turn of the twenty-first century 120
Wei, X-Q. *see* McInnes, I.B.
Weiss, A. *see* Tomlinson, M.G.
Weiss, G. *see* Widner, B.
Welch, J. *see* Jones, M.G.
Wells, A.D. and Malkovsky, M., Heat shock proteins, tumor immunogenicity and antigen presentation: an integrated view 129
Widner, B., Weiss, G. and Fuchs, D., Tryptophan degradation to control T-cell responsiveness (L) 250
Wiest, D.L. *see* Kruisbeek, A.M.
Wren, B.W. *see* Hatzifoti, C.
Wymann, M.P., Sozzani, S., Altruda, F., Mantovani, A. and Hirsch, E., Lipids on the move: phosphoinositide 3-kinases in leukocyte function 260
Wynn, T.A. *see* Cheever, A.W.

**Y**

Yang, Z. *see* Yu, C.Y.
Young, J.D-E. *see* Liu, C-C.
Yu, C.Y., Yang, Z., Blanchong, C.A. and Miller, W., The human and mouse MHC class III region: a parade of 21 genes at the centromeric segment 320

**Z**

Zamoyska, R.

# Subject Index

The suffix (L) = Letters to the editor

Alphabetization is letter-by-letter, e.g. T cells, then T-cell vaccination


**A**

Abortion, chemokines role 417
ACAMPs (apoptotic cell associated molecular patterns) 490
Acetylcholine receptor (AChR), autoantibodies 57 (L)
  IFN-γ immunomodulation role 21–22, 305 (L), 306 (L)
  in myasthenia gravis 20–21, 305 (L), 306 (L)
Activating protein-1 (AP-1), activation by protein kinase Cθ 567–568
Activation-induced T-cell death (AICD), protein kinase Cθ role 571
Adapter proteins
  in antigen receptor signalling 584–591
  as competitive inhibitors 589–590
  cytoplasmic, types 585
  as docking proteins 587–588
  as negative regulators 587–589
  as positive regulators 586–587
  specificity and multi-domain interactions 590
  ubiquitination facilitation 589
Adenovirus vectors
  applications 427
  high-efficiency gene transfer 426–428
Adhesion molecules
  cross-talk 601–603
  in priming of cells 218–219
  *see also* Integrins
Adjuvants
  CpG motifs and 522–523, 526
  heat shock protein action 130
$\beta_2$-Adrenergic receptor, on lymphocytes 539, 541
$\beta_2$-Adrenergic receptor agonists, effect on T-/B-cells 540–541
Affinity landscape 55 (L), 56 (L)
Affinity maturation 436–441
  receptor editing 55 (L), 56 (L)
Ageing
  B-cell repertoire 517–518
  cell population dynamics 517
  energy deficit and immune function 192–193
  lymphocytes 515–521
  T-cell changes 515–518
  T-cell development during 518–519
Airway hyperresponsiveness, viral infections and 118–119, 249 (L)
Allergenicity, grass and oil seed rape pollen 155 (L)
Allergy/allergic disease
  antibody therapy trials 404
  CpG DNA as adjuvant for vaccine 526
  prevention by childhood infections 118–120, 249 (L)
  vasoactive intestinal peptide role 10, 191 (correction)
  *see also* Atopy
Allograft rejection
  antibody therapy trials 404
  avoidance, pancreatic islet xenotransplants 42
  secondary lymphoid tissue role 414
Allorecognition, immune tolerance and gene therapy in transplantation 12–14
Amino acid sequences, MHC class III proteins 322–324
Anaphylatoxins, complement-derived 604
Anergy, control by cell-cycle regulators 552
Angioblasts, homing and role of integrins 602
Angiogenesis, integrin $\beta_3$ deficiency effect 602
*Angiostrongylus costaricensis* infections, eosinophils effect 538
Ankylosing spondylitis, HLA-B27 association 256–260
Antibodies
  anti-DNA 424
  artificial 380
  bispecific *see* Bispecific antibodies
  chimeric, with human effector functions 398
  counting antigens using 154–155 (L)
  diagnostic applications 379–382
  engineering *see* Antibody engineering
  flow cytometry 154–155 (L)
  fragments, recombinant 366–367
  human, production in mice 365–367
  human genes, transfer to mice 365–366
  humanization 397–402
  humanized, production strategies 401
  humanized *vs* chimeric 400–401
  human–mouse chimerization 403–404
  hybrid, immune tolerance induction 172–176
  internet role and websites 355–357
  library preparation/selection 371–372
  monoclonal *see* Monoclonal antibodies
  multivalent Fv antibody constructs 367
  natural *see* Natural antibodies
  phage 371–372
  production systems 367–368
  recombinant *see* Recombinant antibodies
  repertoire 433–435
  response in neonates 35
  single chain Fv (scFv) fragments 366, 391
  single domains 367
  structure and sequence analysis, websites 356
  synthesis, bioenergetics 195
  tolerance induced by 12
  V-region humanization 401
  *see also* Autoantibodies; Humoral immunity; Immunoglobulin(s)
Antibodies, therapeutic 371–378
  clinical trials 403–410
  immunogenicity *vs* antigenicity 399–400
  method of use 408–409
  phage display-based 376
  from plants 368–369
Antibody–antigen complexes, rheumatoid factor origin 177, 411 (L)
Antibody-based protein chips, proteome analysis 380–381
Antibody engineering
  bispecific antibodies 391–392
  impact on diagnostics 379–380
  phage display technology 371–378
  websites 356
Antibody-forming cells
  affinity maturation 436–441
  kinetics 436–437
  selection in germinal centre 437–440
Anti-coagulant therapy, antibody therapy trials 404
Anti-CTLA-4 antibodies 70–71
Anti-DNA antibodies 424
Antigen(s)
  CNS, initiation of T-cell responses 141
  counting using antibodies 154–155 (L)
  delivery system, manipulation of MHC class II pathway 546–550
  delivery system for *H. pylori* vaccine 616–617
  density/dose and role in link of innate/adaptive immunity 627–628
  endogenous, targeting to MHC class II pathway 547

handling by dendritic cells 542–543
highly repetitive, antibody response 628
intracerebral transport pathways 142
phage antibody selection 373
polysaccharide, failure of neonates to produce antibodies 40
receptor signalling, adapter proteins role 584–591
recognition, by γδ T cells 187–188
role in tolerance induction 12
targeting to CR1 and CR2 626–627
targeting to MHC class II pathway 546–547
targeting to splenic marginal zone 627
targets for *Helicobacter pylori* vaccine 615–616
T-independent response and requirements 626–627
Antigenicity, therapeutic antibodies 399–400
Antigen presentation
alternative pathways facilitated by MHC class I 83–88
bioenergetics 194–195
increased by targeting antigens to MHC class II pathway 547–549
by intestinal epithelial cells 123–128
perforin role 160
tumours and role of heat shock proteins 129–130
tumour-specific by MHC class II 461
Antigen-presenting cells (APCs)
B cells role and autoimmune disease 57 (L)
CNS, T-cell response regulation 141–147
engineered for tolerance to autoantigens 549
intestinal epithelial cells 123–124
regulation in CNS 144–145
T-cell competition for 529
tumour antigens transferred to by heat shock proteins 130–131
uptake of apoptotic cells 490
*see also* Dendritic cells; Follicular dendritic cells
Antigen processing
bioenergetics 194–195
dendritic cell role and autoimmunity development 214–215
by intestinal epithelial cells 123–128
MHC class I and role of proteasome system 317–319
MHC class II and thiol reductase role 122
pathways for CD1b molecules 109
proteolytic signalling 166–167
transporter associated *see* TAP
tumour growth and 455–464
Antigen-processing machinery (APM)
class I and class II 455–456
defects in tumours 456–462
Anti-inflammatory therapy, in multiple sclerosis models 295
Antimicrobial peptides 69
natural 69, 191 (correction)
Anti-sense transgenic mice, glucocorticoid receptor 608–610
Anti-TNF therapy 471
Apoptosis
effect on phagocyte–*T. cruzi* interactions 491–492
energy deficit effect 193
induction in thymocytes 88–94
induction of tolerance to 159
in infectious disease 489–494
inhibition by viruses 451
phagocytosis of apoptotic cells 489–494
in SLE 424–425
T cells, inhibition by interferons 337–342
Arthritis
heat shock protein role 131
osteoprotegerin ligand 500
rheumatoid *see* Rheumatoid arthritis
Asthma
antibody therapy trials 404
CCL chemokines and 235–241
CpG DNA therapy 526
exacerbation by respiratory viral infections 118–119, 249 (L)
IL-4/IL-13 signalling in 60–64
IL-13 variants associated 60
norepinephrine effect 540
RSV infections association 119
vasoactive intestinal peptide (VIP) role 10, 191 (correction)
Astrocytes
cytokines/growth factors produced and functions 136–137
immunoreactivity 138
origin and development 133–136
regulation of Th1/Th2 responses 145
Atopy
childhood infections role in prevention 118–120, 249 (L)
IL-4/IL-13 signalling in 60–64
IL-4 variants associated 60
macrophage-derived chemokine role 417
RSV infections association 119
*see also* Allergy/allergic disease
ATP, bioenergetics of immune system 192
ATPase
DNA repair and traffic, used in TAP function model 598–600
$H^+/K^+$, as autoantigen in autoimmune gastritis 348–354
Autoantibodies
in autoimmune gastritis 348–352
in myasthenia gravis 20–21, 305 (L), 306 (L)
rheumatoid factors, origin 177–183, 411 (L)
role in disease 57 (L)
Autoantigens, tolerance, by engineered APCs 549
Autoimmune disease
antibody therapy trials 404
bacterial vaccine treatment 503–508
bone loss mechanism 500–501
dendritic cells role in pathogenesis 214–217
effect of recombinant Ii 549
HLA genes impact 343–344
hygiene hypothesis and 506
immune tolerance induction with hybrid antibodies 172–174
neuroimmunodulation 169
NKT cells function 579
pathogenesis, PARP autoantibodies role 203
perforin role 255
promotion by CpG DNA therapy 526
TNF-R homologues 253
twin studies 343–344
*see also individual autoimmune diseases*
Autoimmune gastritis
experimental model 348
$H^+/K^+$ ATPase as autoantigen 348–354
Autoimmunity
ageing and 519
complement components 603–604
control by cell-cycle regulators 552
cytokine requirements 215
initiation/maintenance in SLE 424–425
MHC class I receptors on γδ T cells 187–191
multiple sclerosis model 290–297
neuroprotection by 265–266
organ-specific 57 (L), 352
organ-specific in gastritis 348–352
regulatory T cells role 95–96
T cells and beneficial effects 265–268
as Th1 response 19–23, 306–307 (L)
wound healing 266–267
Autonomic nervous system *see* Sympathetic nervous system

**B**

2B4 molecule, as co-receptor in NK-cell triggering 231–232
B7 family, B7h and B7-HI 59
Bacteria
exploitation of complement regulators 604
recombinant antibody production 369

Bacterial DNA
CpG motifs, recognition by innate immune system 521
immunotherapy 521–526
*see also* CpG motifs/DNA
Bactericidal/permeability-increasing protein, recombinant ($rBPI_{21}$) 531
Basel Institute of Immunology, funding withdrawn 332
B cell 627–628
activation, dendritic cells role 65
apoptosis in germinal centres 65
autoantibody role in disease 57 (L)
CD28 role in germinal centre formation 333
depletion induced by superantigen 468
development and osteoprotegerin ligand role 497
development and Pax5 role 1
diversity and receptor editing 55 (L)
early differentiation 203
hypermutation and follicular lymphoma pathogenesis 298–299
induction 422–423
marginal zone cell absent in Pyk-2-deficient mice 469
maturational pathways and selection of useful receptors 561–566
memory *see* Memory B cells
in neonates 35–36
norepinephrine effects 540
polyclonal activation, rheumatoid factor origin 178
receptor editing 55 (L)
repertoire 433–434
repertoire and ageing effect 517–518
role in prion neuroinvasion 66–67
subpopulations 204
SYK role 151
T cells interactions, in neonates 37–39
T-independent response and requirements 626–627
B cell lymphomas
follicular, immunopathogenesis 298–306
γδ T-cell proliferation 189
B-cell receptor
assembly and testing for useful receptors 561–566
gene rearrangements 561
harmful, elimination 563–564
lipid rafts role in signalling 59
occupancy and affinity thresholds 440
positive regulation by adapter proteins 586–587
signalling and SYK role 151
B cell-specific activator (BSAP) 1
BCG, in multiple sclerosis 506–507
*BCL2* gene, translocation in follicular lymphoma 298, 301–302
Bcl2 protein 338
production from positively-selected thymocytes 88–94
role in selection of memory B cells 437–439
*BCL6* gene, translocation in follicular lymphoma 298, 301–302
$BCL\text{-}X_L$ 338
Bioenergetics, immune system 192–198
Bispecific antibodies 391–397
anti-trigger and anti-target modalities 391–394
biological responses 392–394
clinical trials 395
effector cells/targets 392–394
engineering of 391–392
vaccine effects 391–394
Bone
cysts, DAP12 deficiency 613
loss, in T-cell associated disease 500–501
metabolism, regulation by osteoprotegerin ligand 495–502
Bone marrow
antibody-forming cell production 436, 439–440
in myeloma 170
Brain
lesions, inflammatory, Th-1 cell induction 507
thymus analogies 133–140
Burkitt's lymphoma, γδ T cells and role of inhibitory MHC class I receptors 188
Bystander effect, murine studies of suicide gene therapy 51–52

C
Calcineurin, PKCθ interactions 568–569
Calpain, activation by TCR ligation and thymocyte selection 91–92
Cancer
antibody-based therapy use 408–409
antibody therapy, trials 405
bispecific antibody trials 395
immunotherapy 71–72
monoclonal antibody actions 406–408
T-cell costimulation through LIGHT pathway 253
tumour necrosis factor therapy 471
*see also* Tumour(s)
Caries, treatment using plantibodies 368–369
Cathelicidins 69, 191 (correction)
Cathepsins, signalling 167
CCL chemokines 237
asthma and 235–241
CD antigens, detection by FACS 392
CD1, restricted antigen presentation by intestinal epithelial cells 126–127
CD1b, antigen processing pathway 109
CD3
immune synapse 2–7, 191 (correction)
pre-TCR signaling and 638–640
signalling cascade 166
CD3/αβTCR, expression by NKT cells 577
CD4
IL-16 interactions 275–276
ligand *see* Interleukin-16 (IL-16)
as sentinel receptor 273–278
$CD4^+$ cells
autoimmune gastritis pathogenesis 350
CD28-dependent OX40 signals for 333–335
differentiation 509–514, 530
high-affinity, migration to germinal centres 335–336
IL-16 as chemoattractant 276–277
IL-16-induced activation and inhibition 277–278
inhibition with hybrid antibody 174
intestinal epithelial cell interactions 124–125
norepinephrine effects 539–540
regulatory, in autoimmune gastritis 350–351
role in germinal centre formation 333
tetracycline-controllable selection 109
*see also* T cell; Th1 cells; Th2 cells
CD8
CD8αα homodimer 634
CD8αβ heterodimer 634
enhancement of T-cell recognition of pMHC 633–634
kinetics/affinities of interactions with MHC class I 631–632
MHC polymorphisms and effect on interactions 633
molecular basis for interaction with MHC class I 630–636
soluble and derivatives as inhibitors of CTLs 632–633
structural basis for peptide–MHC (pMHC) interactions 630–631
$CD8^+$ cells
ageing effect 515–516
differentiation 509–514, 530
inhibition with hybrid antibody 172–173
interaction with intestinal epithelial cells 125–127
transcription termination during differentiation 530
*see also* Cytotoxic T cells
CD25, regulatory T cells 97, 121
CD26
as drug design target 166–167
signalling cascade 166
structure, modelling 167
CD27, memory B-cell marker 204–206
CD38, regulatory T cells 121

CD40, multiple sclerosis model (marmosets) 295
CD45, immune synapse 2–7, 191 (correction)
CD47, OX41 interaction 121
CD70, CD27 ligand 205
CD95, opioid-dependent expression 253
CD95L
  immune suppression in melanoma 72
  lymphocyte cell death due to 71–72
CDC27 antigen, in melanoma 547
Cell cycle
  lymphocyte proliferation 551–552
  regulation in immunity/autoimmunity 551–555
Cell cycle regulators, immune system 551–555
  autoimmunity/tolerance control 552
  functions in immune system 552–553
Cell-mediated immunity
  defective with osteopontin deficiency 477
  osteopontin (Eta-I) 475–478
  prime-boost vaccination strategy effect 163–165
  twin studies 344–345
  *see also* T cell
Cell-mediated veto effect 172
Cell migration, regulation by metalloproteinases 601–602
Cell polarity, intestinal epithelial cells 124–125
Cell trafficking, heparanase 2 and 597
Cellular endopeptidases, signalling 167
Cellular heterogeneity, priming of cells 218–222
Cellular interactions, limiting dilution analysis 15–18
Cellular plasticity, priming of cells 218–222
Central nervous system *see* CNS
Ceramide, second messenger in lymphocytes 555–556
Ceramide-SIP rheostat 556
Chagas disease
  IL-4 and IFN-γ roles 537–538
  *see also Trypanosoma cruzi*
Channel blockers, bioenergetic effects 197
Chaperones
  hijacking strategies, recombinant Ii 548–550
  MHC class I peptide loading 83–88
Chemoattractant receptor-homologous molecule expressed on Th2 cells (CRTH2) 417
Chemoattractants
  osteopontin 475
  phosphoinositide 3-kinases in leukocytes 260–264
Chemokine(s) 237
  activities on lymphocytes 418–419
  angiostatic, CXCR3-binding 416–417
  CCL 235–241
  CD4-T-cell migration to germinal centres 334–336
  cellular distribution 239
  cross-talk with adhesion receptors 601–603
  cytokine response control, in parasitic infections 537
  differential production by different cell types 601
  expression regulation by TNF 111
  homing 419
  in inflammation and immunity 418–420
  inhibition by viruses 449–450
  lymphocyte trafficking 64
  lymphopoiesis 416–418, 419
  modulation methods 100–106, 526–527 (L)
  as morphogens in immune system 601
  nomenclature 237
  in parasitic infections 538
  poxvirus mimicry 242–248
  produced by microglia and astrocytes 145
  T lymphopoiesis and T-cell effector function 416–418
  virus-encoded homologs/modulators 100–103, 526–527 (L)
Chemokine-binding proteins
  families and viruses encoding 104
  role in virus disease pathogenesis 104
  virus-encoded 104–105
Chemokine receptors 240, 419
  CCL 238–239
  expression on Th1 and Th2 cells 184
  HIV-1 binding 417
  virus-encoded modulators 100–103, 526–527 (L)
Chemotaxis
  CD4 cells by IL-16 276–277
  phosphoinositide 3-kinases role in leukocytes 260–264
Chicken MHC, sequence 1
Childhood infections
  allergic/atopic disease prevention 118–120, 249 (L)
  normal immune development 118–120, 249 (L)
*Chlamydia*, multiple sclerosis pathogenesis 506
Chromatin, structural elements in IL-4 expression 481
Chromosomal translocation, follicular lymphoma 298, 301–302
Clinical immunology
  EFIS-CIG role in Europe 210–211
  *see also specific diseases*
Clinical trials
  bispecific antibodies 395
  suicide genes 53
  therapeutic antibodies 403–410
CLIP (class II invariant chain-derived peptide) 547–548
Clonal selection, homing selection hypothesis for T-cell trafficking 315–317
c-Maf, IL-4 expression in Th2 cells 480
CNS
  antigen-presenting cells, T-cell response regulation 141–147
  antigens, initiation of T-cell responses 141
  cytokines 168
  secondary degeneration 265–266
  Th1/Th2 restimulation 145
Coalescence model 557–558
Collectins 68, 191 (correction)
Common lymphoid progenitor cells, early B-cell differentiation 203
Comparative immunology
  MHC class I genes 330
  MHC class II region 329–330
Complement
  adaptive immunity regulation 534
  anaphylatoxins derived from 604
  antibacterial and antiviral protection 625
  in autoimmunity 603–604
  link of innate and adaptive immunity 624–630
  poxvirus mimicry 242–248
  recent developments (conference) 603–605
  regulation, murine embryonic survival 109
  in SLE 534
  structure/function developments 604
Complement regulator
  exploitation by microbes 604
  knockout mice 604
Co-receptor
  HIV-1 417
  NK cells 231–232, 420–421
  T cell, expression regulation 510
Cornea transplantation
  immune tolerance 13–14
  new strategies for tolerance 14
Co-stimulation
  LIGHT pathway 253
  myasthenia gravis pathogenesis 21–22, 306–307 (L)
  T-cell help for germinal centres 333–337
  therapy targeted, multiple sclerosis model (marmosets) 296

Co-stimulatory molecules
CD4 T-cell migration to B-cell follicles 336
immunotherapy evasion by tumours 70–71
T cells and microglia interactions 146
CpG motifs/DNA
acquired immune response induction 524
innate immune system recognition 521–522
side-effects of therapy based on 526
signalling pathways activated 522–523
therapy 526
CR1
antigen targeting 626–627
on erythrocytes, bispecific antibodies targeting 394
CR2, antigen targeting 626–627
CREB-RP, encoded in MHC class III region 326
Creutzfeldt–Jakob disease (CJD)
follicular dendritic cells in pathogenesis 442–444
prion propagation site 66
Crohn's disease, antibody therapy trials 404
Cross-reactivity
IgE, to grass and oil seed rape pollen 155 (L)
polyreactivity *vs* in rheumatoid factors 411 (L)
Cross-talk, receptors for growth factors/chemokines/adhesion molecules 601–603
CTL *see* Cytotoxic T cells
CXCR3 416–417
angiostatic chemokines binding 416–417
CXCR5 expression and CD28-dependent OX40 signals for 333–335
Cyclin-dependent kinases, lymphocyte proliferation 551–552
Cyclins, lymphocyte proliferation 551–552
Cyclosporine A, bioenergetic effects 197
Cytokine network, perforin expression regulation at maternal–fetal interface 161
Cytokines
antiapoptotic 338
chemokines controlling, in parasitic infections 537
in CNS 168
definitions of Th1/Th2 cells 199–200 (L), 200 (L)
expression and osteopontin role 475–476
gene expression and transcriptional regulation 479
growth hormone as 211
immune response to parasites 537
induced by IL-18 313
inhibition by viruses 245, 449–450
in myasthenia gravis 19–20, 305 (L), 306 (L)
in neonates 39–40
NK-cell development, role 114–115
produced by microglia and astrocytes 145
produced by thymic epithelial cells and astrocytes 136–137
profiles of Th1/Th2 cells 199–200 (L), 200 (L)
receptor, γ chain, role in thymocyte selection 88–94
regulation of T cell differentiation 479
requirements in autoimmunity 215
in schistosomiasis 29–30, 465–466 (L)
T-cell trafficking 315–317
thymocyte selection, role 88–94
T lymphopoiesis and T-cell effector function 416–418
*see also* Interferon(s); *specific interleukins*
Cytokinesis, bioenergetics 193–194
Cytolysis, NK-cell-mediated and receptors triggering 228–234
Cytomegalovirus (CMV)
chemokine homolog encoded 102
chemokine receptor homolog encoded 103
NK-cell action 430
Cytoprotective polypeptide, vasoactive intestinal peptide (VIP) 10, 191 (correction)
Cytosine deaminase, suicide gene 51
Cytoskeleton
T-cell receptor interactions 223–228
ζ chain (CSKA-ζ) 223, 224–226
Cytotoxicity
bioenergetics 195
natural, NK receptors 228–234
NK-cell activation 420–421
splenic NK-cell, sympathetic nervous control 283–284
tumour, mediated by NKT cells 580
*see also* Natural cytotoxicity receptors (NCRs)
Cytotoxic T cells
activation and MHC class I role 630–636
anti-tumour response generated by recombinant Ii 549
epitopes, processing and role of proteasome system 317–319
evasion by viruses 452
induction by heat shock proteins 309
inhibition with hybrid antibody 172–173
at maternal–fetal interface 160–162
soluble CD8 and derivatives as inhibitors 632–633
for tumour-associated antigens 71
*see also* $CD8^+$ cells

**D**
DAP12, in lymphoid/myeloid cell function 611–614
deficiency and effects 613
gene mutations in mice 613
NK cell receptor activation 612
as transmembrane adaptor in myeloid receptor complexes 612–613
Daudi ligand 189
DC-LAMP 543
DC-STAMP 543
Decidual NK cells, perforin expression regulation 161–162
Defensins
cysteine-rich 69, 191 (correction)
rhesus theta defensin 1 (RTD-1) 1
Dementia, presenile, DAP12 deficiency 613
Dendritic cells (DC) 431–433, 498–499
activation by heat shock protein 309
antigen handling 542–543
autoimmune disease pathogenesis 214–217
defects, autoimmune disease 215–216
differentiation pathways 215
functions 542–544
immunobiology 542–545
induction of tolerance to apoptotic cells 159
initiation of T-cell response to CNS antigens 141
modified after uptake of apoptotic cells 492
molecules associated and functions 542–543
multi-lineage system 431–433
in myeloma vaccine development 170
self-tolerance role 214
stimulation of B and T cells 65
subsets 431–432
subsets and T-cell response types 432–433
T-cell interactions 543–544
T-cell interactions and osteoprotegerin ligand role 496–499
uptake of apoptotic cells 490
visceral leishmaniasis 73–75
Depriming of cells 219–220
D genes, follicular lymphoma pathogenesis 301–302
Diabetes mellitus, insulin-dependent
B cells role in antigen presentation 57 (L)
NKT cells function 579
norepinephrine effect 540–541
prediction and twin studies 345–346
Diagnostic applications, antibodies 379–382
Differential avidity model, thymocyte selection 93
Dilution analysis, limiting 15–18
Diphtheria toxin, neutralization 333
Disease, microchimerism 116–118
Di-ubiquitin 543

DNA
CpG *see* CpG motifs/DNA
damage, in inflammatory disease 79
sequence of H2 region (mouse MHC) 328–332
sequence of MHC class III region 320–328
DNA repair ATPase, use in TAP function model 598–600
DNA vaccines
*Helicobacter pylori* vaccine 617
myeloma 171
prime-boost strategy 163–165
recombinant II constructs for 549
Th1 induction 505
Docking proteins, adapters as 587–588
Dok protein, as negative regulatory docking protein 588
*Drosophila*, innate immunity 68–69, 191 (correction), 535
Drugs
design, CD26 as target 166–167
effect on cell energy metabolism 195
targeting of energy metabolism in immune cells 196–197
Dynamic compensation theory, perforin deficiency and 592 (L), 593–595 (L)

**E**

Early T-lymphocyte activation I (Eta-I) *see* Osteopontin
Education
antibody websites 355
clinical immunology 210
Endopeptidases, cellular, signalling 167
Endothelial cells, angiostatic activity CXCR3-binding chemokines 416–417
Energy metabolism
drugs affecting 195
immune system and 192
therapeutic targeting in immune cells 196–197
Enteric immunity, neural involvement 281–282
Entheses, class I-mediated events 257
Environmental factors, impact on immune-mediated disease 343
Enzymes, encoded in MHC class III region 326
Eosinophils
chemokines 235–236
eotaxin activity 236
in parasite-elicited inflammation 538
priming 218–219
Eotaxins, in asthma 236–238
Epitopes
endogenous, targeting to MHC class II pathway 547
T cell, exposure by interaction with antigen-specific B cells 57 (L)
Erk, CD4/CD8 cell differentiation 511
Erythrocytes, CR1, bispecific antibodies targeting 394
Eta-I *see* Osteopontin
Europe, clinical immunology 210–211
European Federation of Immunological Societies (EFIS) meeting 415–428
European Immunology Meetings 415–416
Evasion of immune response *see* Immune evasion
Evolution, immune system 422–423
Experimental autoimmune encephalomyelitis (EAE)
IL-12 pathogenic role 24–25
marmosets 290–297
New World monkeys 293–294
Old World monkeys 290–293
primates 290
TNF-deficiency and leukocyte movement 110
tumour necrosis factor role 470
Experimental autoimmune gastritis (EAG) 348
Experimental autoimmune myasthenia gravis (EAMG) 19, 306–307 (L)
Expressed sequence tags, murine MHC sequence 328
Extracellular matrix, metalloproteinase role in remodeling 601–602
Extracellular matrix proteins, osteopontin structure/functions 475–477
Extracellular proteinases, metalloproteinase role in regulating cell migration 601–602
Extravasation
neural involvement 284–287
Th1 and Th2 cell thresholds 183–186

**F**

Familial haemophagocytic lymphohistiocytosis, perforin deficiency 254, 592–594 (L)
Fas
opioid-dependent expression 253
T-cell regulation in tumours 71
Fascin protein 543
Fas ligand
deficiency, effect in pregnancy 160–161, 162
T-cell regulation in tumours 71
Fc-binding proteins, rheumatoid factor origin 177–178, 411 (L)
Fc receptors
conformation change preventing two molecules from binding to one IgG 310–312
FcγRII receptors, role in antibody-forming cell switch to memory cells 440
glycosylation, rheumatoid factor origin 178
signalling and SYK role 151–152
Fetus
non-inherited maternal HLA antigens 269–273
*see also* Maternal–fetal interface
Fibroblast-derived rescue factor (IFN-β) 338
Fine-needle aspiration, tumour (melanoma)–host interactions analysis 619–623
FK506, bioenergetic effects 197
Flow cytometry, counting antigens using antibodies 154–155 (L)
Flt-3 ligand, modulation of IL-15 function on NK cell development 114–115
Fluorescence activated cell sorter (FACS) 383–390
CD antigens 392
colors/color analysis 393–394
dual-laser 393
in immunology 391–392
mAbs as reagents 390–391
reagent problem 383–384
two-color analysis with a one-laser FACS 392
Follicular dendritic cells (FDC)
impaired prion replication in mice deficient in 468
prion neuroinvasion 66–67
prion protein association 442
in TSE pathogenesis 442–446
Follicular lymphoma, immunopathogenesis 298–306
Fowlpox virus (FPV), prime-boost vaccination strategy 163–165
Fusion proteins, invariant chain (Ii) 547

**G**

α-Galactosylceramide
ligand for NKT cells 577
stimulation of NKT cells 577
γc (common cytokine receptor γ chain), role in thymocyte selection 88–94
γδ T cells
antigen recognition 187–188
in autoimmunity 187–191
signalling 530
SYK expression and role 150
in tumour immunity 187–191
Gastric epithelial cells, cell loss mechanisms in autoimmune gastritis 351
Gastric $H^+/K^+$ ATPase, as autoantigen in autoimmune gastritis 348–354
GATA-3, Th2 cell differentiation 480–481
Gene cluster, MHC class III region 321–328
Gene delivery
by adenovirus vectors 426–427
methods 49
new methods 48
optimization 49–50
receptor-mediated 49–50
suicide genes 48–54
viral vectors 50, 426–427
Gene expression, regulation of MHC class III region 325

Gene therapy
heat shock proteins and tumour immunogenicity 130
immune deviation from Th1 to Th2 cells as target 13
in keratoplasty 14
suicide genes 48–54
in transplantation 12–14
*see also* Immunotherapy; Suicide genes
Genetic defects
dendritic cell and autoimmunity development 215–216
SLE 424
Genetic factors, impact on immune-mediated disease 343
Gene transfer, by adenovirus vectors 426–428
Genome scans, murine MHC 329–332
Genotoxic effects, oxidative stress 79
Germinal centre (GC)
antibody-forming cells origin 436
B cells and apoptosis 65
co-stimulation and selection for T-cell help 333–337
'ectopic' 57 (L)
follicular dendritic cells role in TSE 442–444
formation and CD28 role 333
formation and T cells role 333
high-affinity CD4 T cell migration 335–336
memory B-cell origin 436
memory B-cell selection 437–440
prion engulfment 66–67
receptor editing 55 (L)
selection of antibody-forming cells 437–440
switch from antibody-forming cells to memory cells 439–440
in visceral leishmaniasis 76
Germinal Centre Conference 65
Glaucoma, antibody therapy trials 404
Glial cells
immunoreactivity 138
origin and development 133–136
Gliomas, suicide gene therapy 53
Glomerulonephritis, chemokines role 416
Glucocorticoids
bioenergetic effects 196–197
immunomodulation mediated by 281
inhibitors 609
receptor, anti-sense transgenic mice 608–610
role in thymocyte development 644–645 (L)
T-cell development 606–611, 644 (L), 645 (L)
T-cell selection 606–608, 644 (L), 645 (L)
Glycoinositolphospholipids (GIPLs), protozoa recognition 536–537
Glycosphingolipids, lipid storage diseases 558
Glycosylphosphatidylinositol (GPI) anchors proteins, microdomains in lymphocyte signalling 2–7, 191 (correction)
protozoa recognition 536–537
gp180, role in CD1-restricted antigen presentation 126–127
Graft rejection *see* Allograft rejection
Graft-*versus*-host disease (GVHD)
antibody therapy trials 404
suicide gene therapy 53
T-cell costimulation through LIGHT pathway 253
Granuloma
leishmaniasis 75, 76
vasoactive intestinal peptide (VIP) production 10, 191 (correction)
Grass pollen, allergenicity 155 (L)
Growth, genes in MHC class III region 325–326
Growth factors
haematopoietic growth factor, growth hormone as 213
produced by thymic epithelial cells and astrocytes 136–137
receptors, cross-talk with other receptors 601–603
Growth hormone (GH)
as cytokine 211
in haemopoiesis and lymphopoiesis 211
immunomodulating therapeutic agent 211–213
as thymopoietic factor 211–212
GTPase Rap I, control of macrophage activation 597
Gut-associated lymphoid tissue (GALT), antigen processing/presentation 123–124

**H**

H2 region, sequencing 328–332
Haematopoiesis, growth hormone role 211
Haematopoietic growth factor, growth hormone as 213
Haematopoietic progenitor cell, NK-cell development 113–114
Haematopoietic receptors, with ITAM motif 149
Heat shock proteins (hsp)
in arthritis 131
as carriers of antigen peptides *in vivo* 129–130
cytotoxic T-cell induction 309
dendritic-cell activation 309
immune response regulation 505
tumour immunogenicity relationship 129–132
Heavy chains, MHC class I, interactions 84–86
*Helicobacter pylori*, vaccine strategies 615–619
Heparanase 2, cell trafficking 597
Hereditary periodic fever syndrome 470–471
Herpes simplex virus (HSV)-thymidine kinase, suicide gene 50–51
γ-Herpesviruses, chemokine receptor homolog encoded 103–104
High-mobility group 1 (HMG-1) protein 470
High-throughput screening, antibody phage display 374
HIV-1
co-receptors 417
IL-16 as inhibitory factor 278
prime-boost vaccination strategy 163–165
$H^+/K^+$ ATPase, as autoantigen in autoimmune gastritis 348–354
HLA
genes, impact on autoimmune disease 343–344
inherited, impact on immune response development 269–273
non-inherited maternal, perinatal exposure 269–273
*see also* MHC class I; MHC class II
HLA-B27
aberrant, generation/pathogenic actions 259
homodimeric form 256–260
HLA-E, expression and function 532–534
HLA-F 532
HLA-G
expression and function 532–534
isoforms 532
Hodgkin's lymphoma
immunoglobulin gene hypermutation 299–300
transporter associated with antigen processing (TAP) defects 458–459
Homeostasis, neuroimmune network 287–288
Homing selection hypothesis, for T-cell trafficking 315–317
Hormone network, perforin expression regulation at maternal–fetal interface 161
Host–pathogen interactions, type I interferons actions 487–488
Housekeeping functions, bioenergetics 193
Hpa2, cloning and expression profiling 597
Human herpesvirus 8 (HHV-8), chemokine homolog encoded 100–102, 526–527 (L)
Humoral immunity
inhibition by viruses 447–448
twin studies 344–345
*see also* Antibodies; B cell
Hybridoma technology 364–370
background to development 359–364
mass culture of cell lines 368
patents 357–358
*see also* Monoclonal antibodies
Hygiene hypothesis 506
childhood infections and atopy prevention 118–120, 249 (L)
Hypodense cells 219, 221
Hypothalamic hormones, role in inflammatory responses 168

I
Idiotypic vaccines, myeloma 170–171
Immune cell trafficking 64
neural mechanisms 287–288
*see also* Leukocyte movement/migration
Immune evasion
by *Leishmania* 75
microbial, innate immunity 69–70, 191 (correction)
by viruses, chemokine modulation 100–106, 526–527 (L)
virus mechanisms 447–455
*see also* Molecular mimicry
Immune-mediated diseases, twin studies 343–344
Immune regulation
by IL-18 312–315
neural mechanisms 281–289
parasitic infections 536–538
Immune response
avoidance by humanization of therapeutic antibodies 399
cell-cycle regulators 551–555
complement role 534
development in fetus 269–273
impact of non-inherited maternal HLA antigens 269–273
impairment in DAP12 deficiency 613
induction by CpG DNA 524
initiation by dendritic cell–T cell interaction 543–544
interferon α/β secretion 339–340
intracerebral *see* Intracerebral immune response
to lipopolysaccharide, *TLR4* gene mutations 414
in neonates 35–41
NKT cells role 578–580
organ-specific in infectious disease 73–78
parasitic infections 537
recombination-activating genes (RAGs) role 534–535
regulation by osteoprotegerin ligand 495–502
repertoires and rules 433–435
role of phagocytosis of apoptotic cells 489–491
T-cell clonality 107 (L)
tumour evasion 70–72
visceral leishmaniasis 73–76
*see also* Cell-mediated immunity; Humoral immunity; Immune system
Immune suppression
by hybrid antibodies 172–174
IL-16 role 277–278
mechanisms by tumours 72
stress-related 253
Immune surveillance, CNS, T-cell response regulation 141–147
Immune synapse 121–122
microdomains 2–7, 191 (correction)
signalling 122
T-cell receptor and cytoskeleton 224–226
T cells, protein kinase Cθ role 569–570
Immune system
ageing effects and impacts 519
benefits of autoimmune T cells 265–267
bioenergetics 192–198
cell-cycle regulators 551–555
chemokines role as morphogens 601
energy supply/deficit effect 192–193
homeostasis, neuroimmune network and 287–288
nervous system interactions 166–169, 281–289, 332 (correction)
neural control 281, 283
norepinephrine role 539–542
regulation, perforin role 255
rules and exceptions 422–423
*see also* Immune response
Immune tolerance
control by cell-cycle regulators 552
in corneal transplantation 13–14
dendritic cell role 214
impact of non-inherited maternal HLA antigens 269–273
induction *see* Immune tolerance induction *(below)*
mechanisms 95
multiple sclerosis therapy in marmosets 295–296
in neonates 35
oral, intestinal epithelial cells and 124
pancreatic islet xenotransplants 42–47
regulation, model 552
self-tolerance maintenance 563–565
in transplantation (workshop) 12–14
Immune tolerance induction
by antibodies 12
antigen role 12
to apoptotic cells 159
with hybrid antibodies 172–176
low-dose aerosol immunization 121
mechanisms 12–13
in murine islet xenografts 44
Immunity, adaptive and link to innate immunity 624–630
Immunoassays 379–380
Immunobiology
dendritic cells 542–545
monoclonal antibodies and FACS 383–390
vasoactive intestinal peptide (VIP) 7–12, 191 (correction)
Immunocytes, vasoactive intestinal peptide synthesis 7, 191 (correction)
Immunogenicity
enhancement by natural antibodies and complement 627–628
therapeutic antibodies 399–400
Immunoglobulin(s)
fold, binding sites made by phage display 376
high copy-number (HCN) repertoire 434
low copy-number (LCN) repertoire 434
*see also* Antibodies
Immunoglobulin E (IgE)
cross-reactive, to grass and oil seed rape pollen 155 (L)
IL-4 and IL-13 variants associated with level changes 62
IL-4 variant and atopy association 60–61
Immunoglobulin G (IgG)
Fc binding site 310–311
Fc conformation change preventing two molecules from binding to 310–312
IgG–FcγR interaction, stoichiometry 310
signalling and class switching 159
Immunoglobulin genes
in follicular lymphoma 298–301
rearrangements and repertoire 433–434
Immunological homunculus, concept 267
Immunological memory *see* Memory, immunological
Immunology
evolutionary aspects 422–423
in Poland 415–416
*Immunology Today*, changes 467
Immunomodulation
glucocorticoid-mediated 281
by growth hormone 211–213
IFN-γ role, AChR autoantibodies 21–22, 305 (L), 306 (L)
by poxviruses 242–243
by stress 282
Immunopathogenesis, follicular lymphoma 298–306
Immunopathology
multiple sclerosis models 295
schistosomiasis 29–34, 465–466 (L)
Immunoreceptors
for neurohormones and neurotransmitters 168, 169
signalling, microdomains 2–7, 191 (correction)
signalling and role of tyrosine kinase SYK 148–154
Immunoregulation *see* Immune regulation
Immunoregulatory proteins, viruses 447
Immunosenescence 515–521
Immunotherapy 71
bacterial DNA 521–526
multiple sclerosis models 295–296
tumour evasion mechanisms 70–72
*see also* Gene therapy; Immunomodulation
Impact factors, *Immunology Today* 467

Indoleamine 2,3-dioxygenase, T-cell proliferation inhibition 250 (L)
Infections/infectious disease
children and normal immune development 118–120, 249 (L)
control by NKT cells 579–580
models, immune response mechanisms 536
natural antibodies as first line of defense 625
organ-specific immune response 73–78
recognition and innate immunity 68, 191 (correction)
Inflammation/inflammatory disease
bone loss mechanism 500–501
CD4 and IL-16 interaction 273–278
chemokines role 418–420
chronic *see below*
DNA damage 79
hypothalamic hormone role 168
IL-16 role 278–279
IL-18 expression 312–315
modulation by poxviruses 244–246
parasitic infections 538
Th cell subsets 183–186
tissue-specific inhibition and role of HLA-B27 257
type and requirement for self-maintenance 267
vasoactive intestinal peptide functions 8–10, 191 (correction)
Inflammation/inflammatory disease, chronic
fibroblast-secreted IFN-β 341
interferon α/γ roles 337–342
oxidative stress 78–79
p53 protein accumulation 79
Inflammatory bowel disease
class II expression and processing by intestinal epithelial cells 125
*see also* Ulcerative colitis
Inflammatory cells
osteopontin expression 476–477
priming 218–222
Inflammatory mediators
antagonist by vasoactive intestinal peptide 10, 191 (correction)
priming of cells by 218
Inhibitory MHC class I receptors (INMRs) 421, 428
C-type lectin-like receptors 429
in tumour immunity and autoimmunity 187–191
Inhibitory receptors 421–422
Innate immunity
activation by CpG DNA 523–524
adaptive immunity regulation 534–535
infection treatment strategies 531
microbial evasion 69–70, 191 (correction)
natural antibodies and link to adaptive immunity 624–630
in pregnancy 200–201 (L)
as primitive system in humans 534–535
recognition of CpG motifs 521–522
recognition of parasites 536–537
rhesus theta defensin 1 (RTD-1) 1
symposium report 68–70, 191 (correction)
Insulin-like growth factor (IGF-I), role in thymopoiesis 212
Integrin $\beta_3$ deficiency, effect on angiogenesis 602
Integrins
cross-talk and roles 601–603
expression on Th1 and Th2 cells 184
Rap I action 597
Interferon(s)
multiple sclerosis therapy 24
virus interference with 448
Interferon, type I
Stat4 activation 484–485, 487–488
T-helper cell development 484–489
*see also* Interferon α (IFN-α); Interferon β (IFN-β)
Interferon α (IFN-α)
antiproliferative *vs* antiapoptotic effects 338
inhibition of T-cell apoptosis and link with inflammation 337–342
multiple sclerosis therapy 25
Interferon β (IFN-β)
antiproliferative *vs* antiapoptotic effects 338
as fibroblast-derived rescue factor (IFN-β) 338
fibroblast-secreted in chronic inflammation 341
inhibition of T-cell apoptosis and link with inflammation 337–342
in multiple sclerosis 24–28
Interferon γ (IFN-γ)
in experimental autoimmune myasthenia gravis pathogenesis 19–22, 305 (L), 306 (L)
LMP2, LMP7 and LMP10 induction 456–457
modulation of anti-AChR response 21–22, 305 (L), 306 (L)
proteasome modulation and effect on MHC class I antigen processing 318–319
regulation and Th1 cell differentiation 481–482
regulatory regions (chromatin) 481–482
role in Chagas disease 537–538
TH1 cells producing 199–200 (L), 200 (L)
Interleukin-1 (IL-1) receptor/toll-like receptor (TLR) superfamily 206–209
definition and characteristics 206–207
Interleukin-2 (IL-2)
gene induction by protein kinase Cθ 568–569
IL-2R family, antiapoptotic cytokines 338
T-cell clonality and 107 (L)
Interleukin-3 (IL-3), Th1/Th2 cell response differentiation 199–200 (L), 200 (L)
Interleukin-4 (IL-4)
expression and regulatory regions controlling 481
expression and Th2-specific factors 479–480
genetic variants, IgE levels associated 62
ligands 60
in myasthenia gravis 20–21
receptors 60–61
role in Chagas disease 537–538
signalling, genetic variants in asthma/atopy development 60–64
Interleukin-6 (IL-6), effect on dendritic cells and autoimmunity 215
Interleukin-7 (IL-7), modulation of IL-15 function in NK-cell development 114–115
Interleukin-10 (IL-10)
leishmaniasis 537
schistosomiasis 32
Interleukin-12 (IL-12)
experimental autoimmune myasthenia gravis pathogenesis 19–22
immunoregulatory activity on NK cells 115
in parasitic infections 537
pathogenesis of multiple sclerosis 24–26
roles/actions 25
suppression, multiple sclerosis therapy 24–27
synthesis, inhibitors 28
Th1 response in schistosomiasis due to 31–32
tumour growth inhibition 71
visceral leishmaniasis 75, 76
Interleukin-13 (IL-13)
genetic variants, IgE levels associated 62
ligands 60
receptors 60–61
schistosomiasis 32–33
signalling, genetic variants in asthma/atopy development 60–64
Interleukin-15 (IL-15)
cells producing 114
receptor, structure 114
role at maternal–fetal interface 161
role in NK-cell development 113–116, 161

Interleukin-16 (IL-16)
CD4 functions and 273–280
CD4 interactions 275–276
functions 276–278
as HIV-1 inhibitory factor 278
in inflammation and normal homeostasis 278–279
receptor *see* CD4
structure 274–275
Interleukin-18 (IL-18)
in chronic inflammation 312–315
detrimental and protective effects 312–315
expression and functions 312–315
IL-1 receptor/toll-like receptor superfamily 206, 208
immunoregulatory activity on NK cells 115
parasitic infections 537
receptor 208
Internet, antibody websites 355–357
Intestinal epithelial cells
antigen processing/presentation by 123–128
CD4 T-cell interaction 124–125
CD8 cell interactions 125–127
characteristics/features 123–124
polarity and effect on antigen presentation 124–125
surface molecules 125
Intracerebral immune response
antigen transport pathways 142
regulation 141–147
Intrinsic nerves, enteric immune system 281–282
Invariant chain (Ii)
fusion proteins 547
recombinant, clinical applications 549
*In vivo* research, T- and B-cell development/trafficking 64–65
ITAM motif 231
DAP12 protein in lymphoid/myeloid cell function 611–614
haematopoietic receptors with 149
SYK interaction 148–149

**J**

JAK, IL-4/IL-13 signalling in asthma/atopy development 62–63
JNK, protein kinase Cθ connection 568

**K**

KARAP, signal transduction molecule 228
Keratoplasty, gene therapy 14
Killer-cell inhibitory receptors (KIR)
on γδ T cells and roles 187
KIR-HLA complex 309
structure/function 428–429
Kinin cascade, in parasitic infections 538
KIT, T-cell differentiation 64–65
Knockout mice
anti-sense, glucocorticoid receptor 608–610
complement regulator 604
cytokine requirements in autoimmunity 215
integrin $\beta_3$ deficiency and angiogenesis 602
NK-cell development 114
phosphoinositide 3-kinase 261–262
proteases 167
tumour necrosis factor 110–111
unpredictability of phenotype 602
Kupffer cells, visceral leishmaniasis 75

**L**

LAMP-1 (lysosomal-associated membrane protein) 546
Langerin 543
Lazaroids, bioenergetic effects 197
Lck
CD4/CD8 T-cell commitment 413
role in T-cell differentiation 510–511
Leishmaniasis
IL-10 role 537
visceral, immune response 73–76
Leukaemia
acute myeloid, antibody therapy trials 405
chronic lymphocytic, antibody therapy trials 405
chronic lymphocytic and overproduction of natural antibodies 628
Leukaemia inhibitory factor (LIF) 417
Leukocyte
activation and RAP I role 597
function, phosphoinositide 3-kinases role 260–264
recruitment mechanisms 183–184
surface-receptor-activated phosphoinositide 3-kinases 260–264
*see also* Lymphocytes: *other cell types*
Leukocyte movement/migration
bioenergetics 193–194
lymphocytes 64–65
mechanism 120–121, 183–184
and regulation by TNF 110–113
rolling, mechanism 184
T cells, homing selection hypothesis 315–317
trafficking, neural mechanisms 287–288
*see also* Lymphocytes
Light chains, MHC class I, interactions 84–86
LIGHT costimulatory pathway 253
Limiting dilution analysis (LDA) 15–18
two-cell model 15–18
zigzag curve 15–16
Lipid-derived second messengers, leukocyte function/migration 260–264
Lipid rafts 530
B-cell receptor signalling 59
coalescence model 557–558
pre-TCR signalling 530
*see also* Rafts
Lipid storage diseases 558
Lipopolysaccharide
inflammatory response and role of TLR4 414
receptor (TLR-4) 206, 208–209
*Listeria*, control by NKT cells 580
Liver, leishmaniasis 75, 76
LMP2 and LMP7 455
induced by interferon 456–457
in tumours 457
LMP10
induction by interferon 456–457
in tumours 458
Lymph node organogenesis, osteoprotegerin ligand role 496–497
Lymphocytes
activation, bioenergetics 195
adapter proteins role in signalling 584–591
ageing 515–521
antigen receptor repertoire editing and testing 561–566
antigen-specific, homing 65
cell death induced by CD95L on tumours 71–72
chemokine activity 418–419
effectors in bispecific antibody therapy 392–393
homing, chemokines role 419
homing selection hypothesis 315–317
interactions and analysis 15–18
maturation, chemokines role 419
nervous system interaction 169
norepinephrine receptors 539
ontogeny 64–65
in peripheral tissues, ageing effect 515
proliferation, cell-cycle factors 551–552
second messengers 555–556
signalling, microdomains 2–7, 191 (correction)
trafficking 64–65
*see also* B cell; T cell
Lymphocytic choriomeningitis virus (LCMV), perforin action 254–255, 594–595 (L)
Lymphoid organs
elimination of harmful TCRs 563
norepinephrine release 539
Lymphoid progenitor cells
early B-cell differentiation 203
T-cell development 472–473
Lymphoid tissues
development and TNF role 110
secondary 414
Lymphokines, role in brain and thymus 133–140

Lymphoma
follicular, immunopathogenesis 298–306
Hodgkin's *see* Hodgkin's lymphoma
non-Hodgkin's, antibody therapy trials 405
overproduction of natural antibodies 628
Lymphopoiesis
chemokines role 416–418, 419
growth hormone role 211
Lymphoreticular system, prion propagation 66
Lymphotoxin α (LT-α), structure and function 110

**M**

Macrophage
activation and Rap I role 597
activation failure in leishmaniasis 75
experimental autoimmune encephalomyelitis 25
*Leishmania* evasion 75
modified after uptake of apoptotic cells 492
phagocytosis of apoptotic cells 489–494
visceral leishmaniasis 73–75
Macrophage-derived chemokine, as Th2 cell marker 416, 417
Major histocompatibility complex (MHC) *see* MHC
Malaria, immune prophylaxis/therapy 538
Marfan's syndrome, HLA-B27 association 256–257
Marginal zone B cells, absence in Pyk-2-deficient mice 469
Marmoset, multiple sclerosis model 290–297
Mast cells
afferent nerve interactions 282–283
excitability regulated by sphingosine-SIP rheostat 557
Maternal–fetal interface
HLA-G role 532
innate immunity in pregnancy 200–201 (L)
murine embryonic survival dependent on complement 109
perforin expression 160–162
Melanoma
antigens 70
CDC27 antigen and Ii fusion proteins 547
cell lines, CD95L expression low 72
HLA-G expression 533
immune suppression mechanisms 72
immunogenicity and role of heat shock proteins 130
natural history and serial gene expression analysis 619–623
T-cell responses 107 (L)
Melanoma-associated genes (MAGE), activation and effect of Ii constructs 549
Memory, immunological 423
ageing effect 515–516
CD27 as B-cell marker 204–206
role of interferon α/β 340
Memory B cells
affinity maturation and 436–441
CD27 as marker 204–206
selection in germinal centre 437–440
Memory T cells
ageing effect 515–516
competition with virgin cells 16
induction by osteoprotegerin ligand 500
interferons role 337–342
Meningococcal sepsis, $rBPI_{21}$ treatment 531
Metalloproteinases, cell migration and ECM remodeling 601–602
MHC
chicken, sequencing 1
genes, mouse as model of effects on disease 328–332
human, sequencing 1
immune synapse 121–122
modulation by viruses 452–453
polymorphism and CD8 interactions 633
T-cell receptor interactions 109
MHC class I
alternative pathways of antigen presentation 83–88
antigen presentation and role of TAP 598–600
antigen processing and proteasome system function 317–319, 456–457
antigen processing defects in tumours 455–456
antigen processing pathway 456
events in tissues under stretch 257
evolution and comparison of murine/human genes 330
kinetics/affinities of interactions with CD8 631–632
$L^d$ structures and peptide interactions 83–88
loss from tumour cells 71
molecular basis for interaction with CD8 630–636
NK-cell complex, structure 309
NK-cell receptors 187, 421, 428–429, 429
peptide interactions 83–88
structural basis for CD8 interaction 630–631
structural features 83–88
T-cell recognition and CD8 enhancement 633–634
MHC class I receptors, inhibitory, on γδ T cells 187–191
MHC class II
antigen-processing defects in tumours 455–456
expression and intestinal epithelial cells 125
expression in tumours 461
human and murine comparison 329–330
multiple sclerosis models 292–294
thiol reductase in antigen processing 122
tumour-associated antigens presentation 461
MHC class II pathway
endogenous antigen targeting and increased antigen presentation 546–550
genetic manipulation 546–550
targeting of antigens to 546–547
targeting of endogenous epitopes 547
MHC class III region
centromeric segment 321–328
human and mouse 320–328
between NOTCH 4 and complement C2 320–328
MHC–peptide tetramer complexes, T-cell clonality 107 (L)
MICA/MICB, antigen presentation by intestinal epithelial cells 127
Mice
*DAP12* gene mutations 613
follicular dendritic cells absent and prion replication impairment 468
human antibodies development 364–367
immunodeficiency, scrapie 442–443
knockout *see* Knockout mice
MHC genes 328–332
as models of human disease 330–331
monoclonal antibodies production 364
neonatal immune response 35
PrP-chimaeric immune system 443–444
Pyk-2-deficient mice and marginal zone B-cell absence 469
schistosomiasis model, immunopathology 29–34, 465–466 (L)
SCID *see* Severe combined immunodeficiency (SCID) mice
transgenic *see* Transgenic mice
tumour necrosis factor deficient 110
*see also* Murine models
Microarrays, antibody-based protein chips 380–381
Microchimerism
in human diseases 116–118
sources 116–117
Microdomains, in lymphocyte signalling 2–7, 191 (correction)

Microenvironments
astrocyte and thymic epithelial cell development 134–135
cytokines and growth factor actions in brain/thymus 136–137
Microglia
in experimental autoimmune encephalomyelitis 25
in regulation of T-cell response 145–146
T-cell interactions 146
$\beta_2$-Microglobulin, MHC class I molecule interaction 83–88
Microorganisms
evasion of innate immunity 69–70, 191 (correction)
*see also* Bacteria; Viruses
Mimicry *see* Molecular mimicry
'Missing self hypothesis' 187, 228
Mitochondria, bioenergetics of immune system and 192
Mitogen-activated protein kinases (MAPKs), signalling by CD26 and CD13 167
Mixed lymphocyte reaction, limiting dilution analysis 15–18
Modelling, CD26 structure 167
Molecular chaperones *see* Chaperones
Molecularly imprinted sorbent assays (MIA) 380
Molecular mimicry
anti-idiotypic, rheumatoid factor origin 177–178, 411 (L)
of complement and chemokine system components by poxviruses 242–248
virus-encoded chemokines/chemokine receptor homologs 100–106, 526–527 (L)
Molecular modelling, CD26 structure 167
Molluscum contagiosum virus (MCV), chemokine homolog encoded 102–103
Monoclonal antibodies
background to development 359–364
bispecific antibodies comparison 395
blocking, therapeutic action 406
commercial development of technology 360–362
conjugated 408
as FACS reagents 390–391
Fc region, therapeutic function 408
fluorescence activated cell sorter (FACS) and 383–390
mouse and human 364–370
patents 357–358, 360
practical applications 359–364
production systems 367–368
signalling by, therapeutic role 407–408
targeting, therapeutic 406–407
therapeutic, clinical trials 403–410
therapeutic, method of use 408–409
websites 355–357
Monocyte chemotactic proteins (MCPs), in asthma 235–236
Monosensitization, rapeseed pollen 155 (L)
Mucosal immunity
intestinal epithelial cells for antigen processing/presentation 123–127
neural involvement 281–282
Multiple myeloma
bone marrow events 170
immunogenicity and role of heat shock proteins 130
vaccination progress 170–171
Multiple sclerosis (MS)
antibody therapy trials 404
bacterial vaccine treatment 503–508
*Chlamydia* pathogenic role 506
IL-12 role in pathogenesis 24–26
immunotherapy evaluation in marmosets 295–296
induction of Th1 response 506
interferon β (IFN-β) therapy 24–28
interferon therapies 24
mycobacterial vaccines 506–507
primate model (marmoset) 290–297
Murine embryos, survival dependent on complement regulation 109
Murine models
autoimmune gastritis 348
islet transplantation 43–44
MHC, for effects of MHC genes on disease 329–332
mutagen-induced diseases 52
schistosomiasis, immunopathology 29–34, 465–466 (L)
*see also* Mice
Mutations
antibody affinity and receptor editing 56 (L)
p53 *see* p53 mutations
p53 and rheumatoid arthritis 78–82
*TLR4* gene 414
Myasthenia gravis (MG)
cytokines role and Th1 response 19–23, 306–307 (L)
interferon γ role 19–22, 305 (L), 306 (L)
Mycobacteria
childhood infections and atopy 249 (L)
infection, control by NKT cells 579–580
vaccines, in multiple sclerosis 506–507
MyD88 209
Myeloid cells
effectors in bispecific antibody therapy 393–394
receptor complexes and DAP12 as transmembrane adaptor 612–613
signalling and SYK role 151–152
Myeloma *see* Multiple myeloma
Myocardial infarction, antibody therapy, trials 405

**N**
Nasu-Hakola disease 613
Natural antibodies
as first line of defense 625
link to adaptive immunity 624–630
overproduction 628
pathogen distribution and 59
Natural autoimmunity, beneficial effects 265–268
Natural cytotoxicity receptors (NCRs) 228–234
ligands 232–233, 429–430
molecular structures 230–231, 429–430
NKp30 230, 421
NKp44 229–230, 421
NKp46 229, 420
*see also* Natural killer (NK)-cell receptors
Natural killer (NK)-cell receptors 420–422
activation by DAP12 612
for MHC class I 187, 421, 428–429
for non-MHC ligands 429–430
structure/function 428–431
triggering cytolysis 228–234
Natural killer (NK) cells
activated, natural cytotoxicity receptors expressed 229–230, 429–430
activation 420–421, 428–430
activation in visceral leishmaniasis 73–75
co-receptors 420–421
C-type lectin-like receptors 429
cytotoxicity and NKG2D role 232
DAP12 association 611–612
decidual, perforin expression regulation 161–162
development 430
development and IL-15 role 113–116
effector responses mediated by 430
effectors in bispecific antibody therapy 392
evasion by viruses 452
HLA complex, structure 309
inhibitory MHC class I receptors 187, 421
inhibitory receptors 421
at maternal–fetal interface 160–162
parasitic infections 537
splenic, sympathetic nervous control 283–284
SYK role 150–151
triggering and 2B4 as co-receptor 231–232
*see also* NKT cells
Necrosis
energy deficit effect 193
phagocytosis of cells in SLE 424–425

Negative selection, of thymocytes 88–94, 607–608
Neonates
cytokines 39–40
failure to produce antibodies to polysaccharide antigens 40
immune response 35–41
immune response improvement strategies 39–40
T-cell function 107–108 (L)
Nerve fibres, target cells and immune effects 283
Nerves, afferent
mast cell interactions 282–283
plasma extravasation and 285–286
Nervous system, immune system interactions 166–169
Neural crest, origin and development 133–134
Neural crest cells, immunoreactivity 138
Neural immunoregulation 281–289
Neurodegenerative disease, neuroimmunomodulation 169
Neuroectodermal origin, astrocytes and thymic epithelial cells 133–134
Neurohormones, receptors on immune cells 168
Neuroimmune network, hardwired 287–288
Neuroimmunology 281–289
brain and thymus relationship 133–140
norepinephrine role in immune system 539–542
Neuroimmunomodulation 168–170, 281–289, 332 (correction)
Neuroprotection, by autoimmune T cells 265–266
Neurotransmitters, receptors on immune cells 168, 169
NF-κB activation
PKCθ role 570–571
$TAF_{II}105$ interaction with p65/RelA dimers 469
Nitric oxide
experimental autoimmune encephalomyelitis 25
role in innate immunity 69, 191 (correction)
vasoactive intestinal peptide action 10, 191 (correction)
NKG2D, role in NK-cell-mediated cytotoxicity 232
NK landscape 55 (L), 56 (L)
NK model 56 (L)
affinity maturation 55 (L)
NKp30 230, 421
NKp44 229–230, 421
NKp46 229, 420
NKT cells 573–583
characteristics in humans 575
development 575–577
distribution 575
effector functions 577–578
in immune response and disease 578–580
ligands 577
parasitic infections 537
selection and development 576
subsets 573–574
surrogate markers 574–575
Non-Hodgkin's lymphoma, antibody therapy trials 405
Non-inherited maternal HLA antigens (NIMAs), perinatal exposure impact 269–273
Norepinephrine
communicating pathways with immune system 540
presence/release from lymphoid organs 539
receptors on lymphocytes 539
role in immune system 539–542
Notch, CD4/8 lineage commitment 512
NOTCH4 325–326

**O**

Occupational exposures, rapeseed and cereal pollen 155 (L)
ODF *see* Osteoprotegerin ligand
Oil seed rape pollen, allergenicity 155 (L)
Opiates, Fas expression 253
Organ-specific autoimmunity 57 (L)
Osteoclastogenesis
molecular regulation 498
T-cell role 500
Osteoclasts, regulation by osteoprotegerin ligand 496–497
Osteopontin (Eta-I) 475–478
deficiency and defective cell-mediated immunity 477
expression by inflammatory cells 476–477
inflammatory cell recruitment 475–476
structure and function 475
Osteoprotegerin ligand
bone metabolism regulation 495–496
immune response regulation 495–502
receptor (RANK) 495
Ovarian cancer, suicide gene therapy 53
OX2, expression and interaction with OX2 receptor 121
OX40, selection/expansion of CD4 T cells 333–335
OX41, CD47 interaction 121
Oxidative stress
during ageing 519
in chronic inflammatory disease 78–79
genotoxic effects 79

**P**

p21, tolerance/autoimmunity regulation 552–553
p27, tolerance/autoimmunity regulation 552–553
p53, overexpression in inflammatory disease 79–82
p53 mutations
due to DNA damage from chronic inflammation 79–80
in inflammatory disease 80
in rheumatoid arthritis 79–82
p55 protein 543
*p56lck* transgene, expression 413
p62-Dok, as negative regulatory docking protein 588
PA28 455
proteasome activity and MHC class I antigen processing 319
in tumours 458
PAG/Cbp, as negative regulatory docking protein 587–588
Pancreatic islet xenotransplantation, tolerance induction potential 42–47
Parasites
innate immune response 536–537
phagocyte interactions 491–492
Parasitic infections
immune prophylaxis/therapy 538
immunoregulation 536–538
inflammation 538
pathogenesis 537–538
PARP [poly (ADP-ribose) polymerase] autoantibodies, autoimmune disease pathogenesis 203
Patents
hybridoma technology 357–358
monoclonal antibodies 357–358, 360
Pathogens, distribution and natural antibodies role 59
Pattern recognition receptors (PRRs) 490
Pax5, B-cell development 1
PAX5 transcription factor, B-cell differentiation 64
PBX2 protein 326
Peptides, translocation and role of TAP 598–600
Perforin 254–256, 593 (L)
autoimmune disease and 255
deficiency 254, 592–594 (L)
expression at maternal–fetal interface 160–162
functions 254, 593 (L)
immune regulation-mediated by 255
role in pregnancy 160
Peripheral sensory nerves, plasma extravasation 284–285
Phage antibodies 371
from nonimmune libraries 372
Phage display technology, natural and designer binding sites 371–378
Phagocyte–*T. cruzi* interaction 491

Phagocytosis
apoptotic cells in SLE 424–425
bioenergetics 193–194
Phenyloxazolone, antibodies and affinity of 56 (L)
Phosphoantigens, antigens for Vγ9/Vδ2 T cells 187–189
Phosphoinositide 3-kinases (PI3K)
differential activation and isoforms 260–261
leukocyte function/migration 260–264
Phosphotyrosine-binding (PTB) domains, lymphocyte adapters 585
Plantibodies 368–369
Plants, innate immunity 68–70, 191 (correction)
Plasma cells, generation 205
Plasma extravasation, neural involvement 284–287
Plasma membrane
FcεRI signalling 413
microdomains in lymphocyte signalling 2–7, 191 (correction)
*Plasmodium*, control by NKT cells 580
Plastibodies 380
Platelets, signalling and SYK role 152
Poland, immunology 415–416
Pollen, grass and oil seed rape, allergenicity 155 (L)
Polycystic lipomembranous osteodysplasia with leucoencephalopathy (PLO-SL) 613
Polymorphic eruptions of pregnancy, microchimerism relationship 117
Polymorphic satellites 329
Polysaccharide antigens, failure of neonates to produce antibodies 40
Positive selection
T-cell receptor (TCR) 606–607, 644 (L), 645 (L)
thymocytes 88–94, 512–513
Potassium channel blockers, bioenergetic effects 197
Poxvirus
attenuated vectors, prime-boost vaccination 163–165
mimicry of complement and chemokine system components 242–248
pathogenesis and virus-encoded chemokine-binding protein 104
virulence determinants 244
Pre-eclampsia, microchimerism relationship 117
Pregnancy
diseases, microchimerism in 117
HLA-G expression 532
impact of non-inherited maternal HLA antigens on neonatal immune response 269–273
innate immunity 200–201 (L)
microchimerism source 116–117
perforin role 160
T-cell function 200–201 (L)
termination, immune factors resulting in 160–161
Th2 cytokines 417
Pre-TCR *see* T-cell receptor (TCR)
Pretransplant blood transfusions, benefits 269
Primates
experimental autoimmune encephalomyelitis model 290–293
multiple sclerosis models 290–297
Prime-boost strategy, vaccination 163–165
Priming of cells
concept 218–222
inflammatory cells 218–222
morphological changes 219
reversibility and repeated 219–221
Prion proteins, follicular dendritic cell association 442
Prions
engulfment in germinal centre 66–67
propagation in lymphoreticular system 66
replication and follicular dendritic cells role 442–444, 468
Progesterone, perforin expression regulation at maternal–fetal interface 161–162
Proteases, knockout mice 167
Proteasome system
in MHC class I antigen processing 317–319, 455–456
subunit/activator expression in tumours 457–458
subunits/activators induced by interferon 456–457
Protein chips 380–381
Protein kinase C, PKCθ role in T-cell signalling 203
Protein kinase Cθ 567–573
activation-induced T-cell death 571
AP-1 activation 567–568
isolation, structure and expression 567
JNK connection 568
NF-κB activation 570–571
in Ras pathway 571
role in induction of IL-2 gene 568–569
T-cell synapse 569–570
Proteolytic signals 166–167
Proteome analysis, antibody-based protein chips 380–381
Protozoa, innate recognition 536–537
Psoriasis
antibody therapy trials 404
SRL172 507
Pyk-2-deficient mice, marginal zone B cells 469

**R**

Rafts 557
importance for receptor triggering 558–559
sphingolipids in 557–558
*see also* Lipid rafts
RAG1 and RAG2, lymphocyte antigen receptor repertoires 561
RAGE (receptor for advanced glycation end products), encoded in MHC class III region 326
RANKL *see* Osteoprotegerin ligand
RANTES (CCL5), in asthma 235
Rapeseed pollen, allergenicity 155 (L)
Rap I, activation of leukocytes 597
Ras-MAPK pathway, thymocyte differentiation 511
Ras pathway, protein kinase Cθ role 571
RCCX modules, MHC class III region 324
Receptor editing 55 (L), 56 (L)
in SLE 57 (L)
Recombinant antibodies
bacterial production 369
expression in cell lines 368
fragments 366–368
plant production 368–369
websites 355–357
Recombination-activating genes (RAGs), role in adaptive immunity 534–535
Red cell aplasia, γδ T cells and role of inhibitory MHC class I receptors 189–190
Regulatory T cells 95, 121
development 95–96
model of action 96–98
in transplantation 13
types 95–96
*see also* Th2 cells
Respiratory syncytial virus (RSV) infections, asthma and atopy association 119
Respiratory viral infections, asthma exacerbation 118–119, 249 (L)
RGD sequence 475
Rhesus theta defensin 1 (RTD-1), as new type of defensin 1
Rheumatoid arthritis
antibody therapy trials 404
detrimental and protective effects of IL-18 312–315
osteoprotegerin ligand role 500–501
pathogenesis, p53 mutations role 78–82
structure/origin of rheumatoid factors 177–183, 411 (L)
TNF decoy receptor treatment 253
Rheumatoid factors
cross-reactivity *vs* polyreactivity 411 (L)
IgG complex structure 178–180
structure and origin 177–183, 411 (L)
Rhinovirus infections, allergic responses and 118–119

**S**
Sarcoma
antibody therapy, trials 405
tumour necrosis factor therapy 471
Schistosomiasis
immunopathology 29–34, 465–466 (L)
Th1 *vs* Th2 cytokine responses 30–33
Th2 cytokines 29–32, 465–466 (L)
Scleroderma, NKT cells function 579
Scrapie
in immunodeficient mice 442–443
in mice with PrP-chimaeric immune system 443–444
modelling infection 442
prion propagation site 66
SDF-1, T-cell movement away 309
Second messengers, sphingolipids 555–560
Selectins
ligands on Th cells 184
lymphocyte homing 121
Self-antigens
extrathymic, regulatory T-cell development 96
tolerance 70–71
Self-maintenance, autoimmune T cell role 265–268
Septic shock
energy deficit and effect on immune function 192
vasoactive intestinal peptide role 10, 191 (correction)
Sequence conservation, MHC class III region 321–328
Serial gene expression analysis, melanoma–host interactions 619–623
Serine protease inhibitor 354 (L)
Serpins
evolution and survival strategy 354 (L)
serine protease inhibitor confusion 354 (L)
Severe combined immunodeficiency (SCID) mice
models of xenograft rejection 45–46
scrape 442–443
SH2/SH3 domains, lymphocyte adapters 585
Signalling/signal transduction
activation by CpG DNA 522–523
adapter proteins role 584–591
$\beta_2$-adrenergic receptor stimulation 541
B-cell receptor 59
bioenergetics 195
CD4/CD8 differentiation 509–514, 530
CD13 and CD26 166
cellular endopeptidases 167
DAP122 role 611–613
IgG 159
IL-1 receptor/toll-like receptor (TLR) superfamily 207–208
IL-4/IL-13, genetic variants in asthma/atopy development 60–64
IL-16 interaction with CD4 cells 276–278
immune synapse 122
innate immunity 68–69, 191 (correction)
lipid rafts, thymocyte differentiation 530
by lymphocytes, microdomains 2–7, 191 (correction)
natural cytotoxicity receptors and NK-cell triggering 228–233
nervous and immune system interactions 166–169, 332 (correction)
Notch, CD4/8 lineage commitment 512
phosphoinositide 3-kinases role in leukocytes 260–264
at plasma membrane 413
rafts and sphingolipids role 557–558
specificity of pre-TCR 637–644
sphingolipids function 555–560
T cell and PKCθ role 203
thymocyte selection and role of common cytokine receptor γ chain 88–94
tumour necrosis factor (TNF) 470
tyrosine kinase SYK 148–154
vasoactive intestinal peptide (VIP) 7–8, 191 (correction)
via GPI-anchored proteins, by lymphocytes 2–7, 191 (correction)
ζ chain 223, 224–226
Single-hit kinetics, lymphocyte interactions 15–16
SIP *see* Sphingosine-1-phosphate (SIP)
Somatic hypermutation
immunoglobulin genes in follicular lymphoma 298
V-region genes 204–205
Somatic mutation *see* Mutations
Sphingolipids
as second messengers 555–560
in signal-initiating rafts 557–558
signalling function 555–560
Sphingosine-1-phosphate (SIP), as secreted mediator 557
Sphingosine kinase 556
Spleen
marginal zone, *Leishmania* growth 75
marginal zone and targeting of antigen to 627
in visceral leishmaniasis 76
Spondyloarthropathies, HLA-B27 association 256–257
Src domains, lymphocyte adaptors 585
SRC-family kinases, SYK dependence 148–149
Src-like adaptor protein (SLAP), negative regulator of T-cell signalling 159
SRL172, in psoriasis 507
Stat2, in Stat4 activation 485
Stat4, activation
role of Stat2 485
species-specific 485
by type I interferons 484–485, 487–488
STAT6, IL-4/IL-13 signalling in asthma/atopy development 63
Stem cells, ageing 519
Stress
immune modulation by 282
immunosuppression relationship 253
Stress proteins *see* Heat shock proteins (hsp)
Stroke, antibody therapy trials 404
Stromal cell-derived factor-1 (SDF-1), T-cell movement away 309
Stromal cells, development 472
*Strongyloides* infections, eosinophils effect on inflammation 538
Suicide genes 48–54
gene delivery mechanisms 48–50
human studies and clinical trials 53
pre-clinical studies 51–53
types 50–51
Superantigen, B-cell depletion induced by 468
Suppressor cells, in immune tolerance induction 12
SWAP-70, IgG signalling and class switching 159
Syk, DAP12 signaling via 611–613
SYK tyrosine kinase 150
signalling role 148–154
structure 150
Sympathetic nervous system
control of splenic NK-cell cytotoxicity 283–284
postganglionic nerves and plasma extravasation 285
Systemic lupus erythematosus (SLE)
antibody therapy trials 404
complement role 534
etiopathogenesis 424–426
initiation/maintenance of autoimmunity 424–425
NKT cells function 579
organ-specific autoimmunity 57 (L)
pathogenesis, PARP autoantibodies 203
tumour necrosis factor role 470
Systemic sclerosis, microchimerism relationship 116–117

**T**
T1/ST-2 receptors 206, 208
TAP
function mechanisms and role in peptide translocation 598–600
nucleotide-binding domains (NBDs) 598–599
structure and pore/peptide-binding domain 598
in tumours 458–459
T-bet (T-box expressed in T cells) 482

T cell
αβ and SYK expression and role 149–150
activation, visceral leishmaniasis 73–75
activation, PKCθ role 569–570
activation and signalling via microdomains 2–7, 191 (correction)
anergy, costimulatory molecules and 70–71
antigen presentation and proteolytic signals 166–167
antigen presentation by B cells 57 (L)
apoptosis, ceramide-SIP rheostat regulating 556
apoptosis and protein kinase Cθ role 571
apoptosis during trypanosomiasis 491
apoptosis inhibition by interferons 337–342
autoimmune and beneficial effects 265–268
B-cell interactions, in neonates 37–39
CD4 *see* CD4+ cells; Th1 cells; Th2 cells
CD4/CD8 differentiation 509–514, 530
CD8 cells *see* CD8+ cells; Cytotoxic T cells
cell-cycle regulator actions 552–553
cell-surface molecules and interactions 121
cell-type changes with ageing 515
clonality in immune responses 107 (L)
competition for access to antigen-presenting cells 529
co-receptor expression, regulation 510
costimulation through LIGHT pathway 253
cytokines and effect of childhood infections 119, 249 (L)
dendritic cell interactions 543–544
dendritic cell interactions and osteoprotegerin ligand role 496–499
development 472–474
development and glucocorticoid influence 606–611, 644 (L), 645 (L)
development and osteoprotegerin ligand role 497
development during ageing 518–519
differentiation, cytokines role 479
differentiation, KIT role 64–65
differentiation, Lck role 510–511
differentiation, transcriptional regulation 479–483
effector functions and cytokines/chemokines role 416–418
effectors in bispecific antibody therapy 392
epitopes, exposure by interaction with antigen-specific B cells 57 (L)
function in neonates 107–108 (L)
γδ *see* γδ T cells
homing and recirculation 120–121, 183–184
IFN-I helper cell development 484–489
immune synapse 121–122
induction 422
inhibition by veto effect 172
Lck action 413, 511
maturational pathways and selection of useful receptors 561–566
memory *see* Memory T cells
microglia interactions 146
migration to germinal centres and OX40/CD28 role 335–336
movement away from SDF-1 309
naive, ageing effect 516
in neonates 36–37
NKT cells *see* NKT cells
ontogeny 64–65
in parasitic infections 537
peripheral, development 473–474
recognition of MHC and CD8 enhancement of 633–634
reconstitution and growth hormone role 212
regulation, adaptor proteins role 586
regulation by CNS antigen-presenting cells 141–147
as regulators of bone physiology 500
regulatory cells *see* Regulatory T cells
regulatory (Tr1) response, in transplantation 13
repertoire, ageing effect 517–518
responses to dendritic cell subsets 432–433
response to CNS antigens 141
responsiveness controlled by tryptophan degradation 250 (L)
restimulation in CNS 141–142
selection and role of glucocorticoids 606–608, 644 (L), 645 (L)
selection in neonates 108 (L)
self-tolerance maintenance 563–565
signalling, PKCθ role 203
signalling, plasma membrane microdomains role 2–7, 191 (correction)
signalling, SLAP as negative regulator 159
in SLE etiopathogenesis 424
structure and function 120–122
subsets, fluorescence activated cell sorter 391–392
synapse, protein kinase Cθ role 569–570
tolerance 70–71
trafficking, homing selection hypothesis 315–317
Vγ9/Vδ2 T cells 187–189
virgin, competition with memory cells 16
T-cell lineage
CD4/CD8 differentiation 509–514, 530
commitment 472–473
commitment, Notch signalling and 512
T-cell receptor (TCR)
absent of interaction with MHC 109
allelic exclusion at β locus 640–642
assembly and testing for useful receptors 561–566
cytoskeleton interactions 223–228
developmental regulation of efficiency 529
gene rearrangements 561–562
gene rearrangements and signals for 472–473
genes in multiple sclerosis model (marmosets) 294
harmful, elimination 563
MHC interactions 109
negative selection and glucocorticoids role 607–608
populations 223–224
positive/negative selection of thymocytes 88–94
positive regulation by adaptor proteins 586
positive selection and glucocorticoids role 606–607, 644 (L), 645 (L)
pre-TCR and αβ T-cell fate 637
pre-TCR and signaling specificity 637–644
pre-TCR expression and multiple functions 637–638
pre-TCR signaling and proteins involved 638–640
repertoire 434–435
selection and role of glucocorticoids 606–608, 644 (L), 645 (L)
selection pressures affecting 434–435
signalling, CD3δ and ERK 530
signalling, SLAP as negative regulator 159
signalling, SYK role 149–150
specificity, factors influencing 510
structure 122
T-cell interactions in parasitic infections 537
triggering and rafts 558–559
ζ subunit 223
T-cell-stimulating factor, growth hormone as 213
Terminal deoxynucleotidyl transferase (TdT), lymphocyte antigen receptor repertoires 561
Th1 cells
analysis of activities using zigzag curve 16
chemokine receptors 184
development and IFN-I-activated Stat4 activation 487–488
differentiation, KIT role 64–65
differentiation and IFN-γ regulation 481–482
in graft rejection and shift to Th2 cells 13
homing and chemokine role 185

IFN-γ expression and T-bet role 482
IFN-γ expression control 481–482
IL-18R and T1/ST-2 receptors action 208
induction and regulatory Th2 cell generation 505–507
induction in multiple sclerosis 506
induction methods 505
in inflammation 183–186
inhibition by NKT cells 578–579
integrin expression 184
in multiple sclerosis 25
nomenclature problems 199–200 (L), 200 (L)
pathogenic humoral autoimmunity 19–23, 306–307 (L)
prime-boost vaccination strategy 164
regulation by microglia and astrocytes 145
response to CpG motifs 521, 524
threshold for extravasation 183–186
transcriptional regulation 479–483
Th1 cytokines 199–200 (L), 200 (L)
in myasthenia gravis 19–20, 306–307 (L)
osteopontin role 475–476
in schistosomiasis 29–30, 465–466 (L)
*see also* Interferon-γ (IFN-γ)
Th1-mediated autoimmunity
blocked by induction of Th2 response 503
exacerbation by Th2 effector response 503–504
Th1/Th2 balance
childhood infections and atopy 249 (L)
GATA3 and T-bet role 482–483
osteoprotegerin ligand role 500
*see also* Th1 cells; Th2 cells
Th2 cells
analysis of activities using zigzag curve 16
chemokine receptors 184
IL-4 expression 479–480
IL-18R and T1/ST-2 receptors action 208
induction by NKT cells 578
in inflammation 183–186
integrin expression 184
localization in inflammation 185
macrophage-derived chemokine as marker 417
in neonates 35–41, 107–108 (L)
nomenclature problems 199–200 (L), 200 (L)
recruitment and rolling 183–184
regulation by microglia and astrocytes 145
regulatory and effector types 503–504
regulatory cell induction by bacterial adjuvants 505
threshold for extravasation 183–186
transcriptional regulation 479–483
in transplantation 13
Th2 cytokines 199–200 (L), 200 (L)
CD4 T-cell migration to B-cell follicles and 336
inhibition by osteopontin 475–476
in myasthenia gravis 19–20, 306–307 (L)
in pregnancy 417
in schistosomiasis 29–32
*see also* Interleukin-4 (IL-4)
Thiol reductase, role in antigen processing 122
Thymectomy, regulatory T-cell development and 95–96
Thymic environment, T-cell development 472
Thymic epithelial cells
cytokines and growth factors produced and functions 136–137
immunoreactivity 138
origin and development 133–136
Thymocytes
$CD4^+$ single-positive 90–91
development and glucocorticoid role 644–645 (L)
differentiation into CD4/CD8 cells 509–514, 530
lipid rafts signalling in differentiation 530
Thymocyte selection
differential avidity model 93
γc (common cytokine receptor γ chain) role 88–94
negative 88–94, 607–608
positive, elicited by T-cell receptor 88–94
survival and positive selection 512–513
two-step selection model 91
Thymopoiesis
conference report 472–474
growth hormone and IGF-I role 211–212
Thymus
age-related changes 65, 518
brain similarities 133–140
coreceptor reversal 530
functions 95–99
involution, in ageing 518–519
lineage determination 509–510
NKT-cell development 575–576
regulatory T-cell development 95–96
Thyrotropic receptor autoantibodies 57 (L)
Tissue engineering, pancreatic islet xenotransplants 42–43
Tissue maintenance, autoimmune T-cell role 265–267
TLR4 470
role in immune response to pathogens 414
tumour necrosis factor and 470
*see also* Toll-like receptors (TLRs)
*TLR4* gene mutations 414
T lymphopoiesis
chemokines role 419
cytokines and chemokines role 416–418
TNF-α *see* Tumour necrosis factor
TNF-β *see* Lymphotoxin α (LT-α)
TNXB protein 326
Tobacco plants, antibody production 368–369
Tolerance *see* Immune tolerance
Toll, function 535
Toll/interleukin-1 receptor (TIR) 535
Toll-like receptors (TLRs) 206, 207, 535
functions 535
IL-1 receptor superfamily 206–209
TLR4 *see* TLR4
tumour necrosis factor and 470
*Toxoplasma gondii* infection, immune response 537
Training
antibody websites 355
clinical immunology 210
TRANCE *see* Osteoprotegerin ligand
Transcriptional regulation
CD4/CD8 cell differentiation 513
Th1/Th2 polarization 479–483
Transcription factors
Th1 cell differentiation 481–482
Th2 cell differentiation 480–481
Transcription initiation complex $TAF_{II}105$, NF-κB activation and 469
Transforming growth factor β, MHC class I events suppressed 257
Transgenes, delivery by adenovirus vectors 426–427
Transgenic mice
anti-sense, glucocorticoid receptor 608–610
human antibodies from 366
prion neuroinvasion 67
Vβ5 564–565
Transgenic plants, antibody production 368–369
Transmissible spongiform encephalopathies (TSE), pathogenesis 442–446
Transplantation
gene therapy 12–14
immune tolerance induction 12–14, 172–174
impact of non-inherited maternal HLA antigens 269–273
microchimerism due to 117
organ survival and impact of non-inherited maternal HLA antigens 269–273
rejection *see* Allograft rejection
xenogeneic islets 42–47
Transporter associated with antigen processing (TAP) *see* TAP
TRAPS, TNFR mutation causing 470–471
Trophoblast, innate immunity in pregnancy 200–201 (L)

*Trypanosoma cruzi*
phagocyte interactions 491–492
*see also* Chagas disease
Tryptophan, degradation to control T-cell responsiveness 250 (L)
Tumour(s)
anti-CTLA-4 antibody therapy 70–71
antigen presentation and role of recombinant Ii 549
antigen processing defects 455–464
CD95L expression 71–72
class II expression 461
cytotoxicity mediated by NKT cells 580
evasion of immune response 70–72
HLA class I-negative 71
HLA-G expression 533
innate immunity activation by CpG DNA 523–524
melanoma–host interactions 619–623
tolerance induction 620
vaccines *see* Tumour vaccines
*see also* Cancer
Tumour-associated antigens (TAA) 70, 71
debate over and T-cell clonality 107 (L)
identification, recombinant Ii 547
immune response and restriction methods 620
presented by MHC class II 461
Tumour–host interactions 619–623
Tumour immunity, inhibitory MHC class I receptors γδ T cells 187–191
Tumour immunogenicity, heat shock proteins association 129–132
Tumour necrosis factor (TNF)
anti-TNF therapy 471
B7h induction 59
cancer therapy 471
chemokine expression regulation 111
clinical implications 470–471
gastric epithelial cell loss in autoimmune gastritis 351
haemopoietic source 110–111
induction by IL-18 and role in rheumatoid arthritis 313
leukocyte movement regulation 110–113
recent advances 470–471
signalling pathways 470
structure and function 110
zTNF4 253
Tumour necrosis factor (TNF) family, osteoprotegerin ligand *see* Osteoprotegerin ligand
Tumour necrosis factor receptor (TNFR) 111–112
homologues in autoimmune disease 253
mutation causing TRAPS 470–471
Tumour promoting factor 471
Tumour suppressor genes, p53 in rheumatoid arthritis 79–82
Tumour vaccines
heat shock protein response 130
myeloma 170–171
Twin studies 342–347
immune-mediated diseases 343–344
Tyrosine kinases
in signal-initiating rafts 557–559
SYK *see* SYK tyrosine kinase

**U**

Ubiquitination, adapters as facilitators 589
Ulcerative colitis
antibody therapy trials 404
p53 mutations 80

**V**

Vaccination, prime-boost strategy 163–165, 617
Vaccines
bacterial, multiple sclerosis treatment 503–508
development, in multiple myeloma 170–171
DNA *see* DNA vaccines
*Helicobacter pylori*, strategies 615–619
idiotypic, against myeloma 170–171
mycobacterial, in multiple sclerosis 506–507
tumour *see* Tumour vaccines
Vagal nerve, plasma extravasation and 286
Vasoactive intestinal peptide (VIP)
as cytoprotective polypeptide 10, 191 (correction)
immunobiology 7–12, 191 (correction)
inflammatory function modulation 8–10, 191 (correction)
signalling in immune system 7–8, 191 (correction)
Vectrology 426–427
Veto effect, cell-mediated 172
Viral infections, innate and adaptive immunity 624–625
Viral pseudotyping 50
Virgin T cells, competition with memory T cells 16
Viruses
allergic disease development 118–120, 249 (L)
apoptosis inhibitors 451
chemokine-binding proteins encoded 104
chemokine homologs encoded 100–103, 526–527 (L)
chemokine modulation 100–103, 526–527 (L)
chemokine receptor homologs encoded 103–104
cytokine/chemokine inhibition 449–450
cytokines and cytokine receptors 450
cytotoxic T cell and NK cell evasion 452–453
humoral immunity inhibition 447–448
immune evasion mechanisms 447–455
immunoregulatory proteins 447
interference with interferons 448
MHC modulation 452–453
Virus infections
antibody therapy, trials 405
asthma and chemokines 238
perforin action 254–255, 592–594 (L)
Virus vectors
adenoviruses 426–428
gene delivery 50
Visceral leishmaniasis, immune response 73–76

**W**

Websites, antibodies 355–357
Wiskott–Aldrich syndrome, dendritic cell defects and autoimmunity 216
Wortmannin, leukocyte activation 260–261
Wound healing, autoimmune 266–267

**X**

Xenotransplantation (xenografts)
in outbred species and humans 46
pancreatic islets 42–47
rejection, murine models 45–46
rejection mechanisms 43–44

**Z**

ZAP-70
activation and DAP12 signaling via 611–613
signalling role and structure 148
Z domain 380
Zigzag phenomenon 15

# Index of Books Reviewed


**B**

Baxter, A.G., *Germ Warfare – Breakthroughs in Immunology*, 527

Breitling, F. and Dübel, S. (eds), *Recombinant Antibodies*, 412

**C**

Chamow, S.M. and Ashkenazi, A. (eds), *Antibody Fusion Proteins*, 250–251

**D**

Daëron, M. and Vivier, E., *Immunoreceptor Tyrosine-based Inhibition Motifs*, 595

**F**

Freshney, R.I., *Freshney's Culture of Animal Cells: A Multimedia Guide*, 57

**J**

Janeway, C.A. *et al.*, *Immunobiology: The Immune System in Health and Disease*, 201

**L**

Lahita, R.G. (ed.) *Systemic Lupus Erythematosus (3rd edn)*, 156

Lotze, M.T. and Thomson, A.W., *Dendritic Cells*, 156–157

**M**

Marsh, S.G.E. *et al.*, *The HLA Facts Book*, 308

**P**

Pearson, J.D., *Vascular Adhesion Molecules and Inflammation*, 594–595

**R**

Rosen, F.S. and Geha, R.S., *Case Studies in Immunology: A Clinical Companion (2nd edn)*, 251

Rowland-Jones, S.L. and McMichael, A.J. (eds), *Lymphocytes: A Practical Approach (2nd edn)*, 595–596